B/W VIDEO CAMERA

AVC-3250CE

Revised-1

ELECTRONIC VIEWFINDER
SONY
VIDEO CAMERA
SONY

SONY®

SERVICE MANUAL

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SECTION 1
GENERAL DESCRIPTION

1-1 INTRODUCTION

This manual provides service data for the Model AVC-3250CE Video Camera. This camera is designed for use with the Sony videocorders and/or for use with closed circuit monitoring etc. Camera feature-high resolution (more than 550 lines)-light level switch (6dB sensitivity change)-external pedestal control.

The FET preamplifier circuit maintains a signal-to-noise ratio of greater than 44 dB, in the high mode of the Light Level switch.

The automatic sensitivity control system automatically adjusts sensitivity to produce high resolution pictures over a very wide range of light levels (100 to 100,000 lux), in the low mode of the light level switch, (with an f 1.8 lens).

1-2 SPECIFICATION

Standard lens:	f 1.8, C mount
Camera tube:	2/3 inch separate mesh vidicon Type 8844 or equivalent
Semiconductors:	57 transistors, 28 diodes
Scanning system:	EXT 2:1 Interlace INT H. Free Oscillation V. Line Lock
Scanning frequency:	H 15, 625 Hz; V 50 Hz
Scanning lines:	625 lines
Frame rate:	25 Hz
Video output:	0.7v p-p, sync 0.3V, sync negative 75 ohms, unbalanced, UHF coaxial connector 6 pin connector
Horizontal Resolution:	High mode more than 550 lines at the center more than 400 lines at the corners Low mode more than 450 lines at the center more than 300 lines at the corners
Signal-to-noise ratio:	High mode 44 dB Low mode 40 dB
Minimum Illumination:	High mode 150 Lux Low mode 15 Lux
Automatic sensitivity range: (with f1.8 lens)	High mode 300–100,000 Lux Low mode 100–100,000 Lux
Power requirements:	220V/240V ±10% 50 Hz 13 Watts (30 watts with viewfinder)
Ambient temperature:	0–40°C (32°–104°F)
Dimensions:	110(w) x 120(h) x 330(d) mm (4.33" x 4.75" x 13")
Weight:	3.55 kg

ACCESSORIES SUPPLIED:

AVC 3250CES

- Standard f1.8, 16mm lens
- Camera cable
- UHF cable assembly
- Polishing cloth
- Instruction manual

AVC 3250CEK

- Zoom lens, VCL-1206
- Camera cable
- Polishing cloth
- Instruction manual
- Carry case assembly
- Elevator tripod VCT-20A
- Microphone F-27
- Mic Stand Assembly
- Mic Extension Cord

1-3 OPERATION

1. Precautions – to protect the vidicon:

a. Avoid mechanical shock.

b. Do not Carry the camera with the lens pointed downwards.

c. Never point the camera at a source of intense light or at the sun. When outdoors be careful of camera placement.

d. Avoid continuous shooting of a high contrast subject in strong light. Move the camera frequently to prevent the image "burning in" at the camera tube target. To eliminate minor target burns, turn off the camera and put the lens cap in place for an hour or so. As an alternative, direct the camera at an all white scene with uniform bright illumination of 1,000 lux for a few minutes.

e. Keep the camera away from magnetic fields such as found near television sets, motors, transformers etc. The picture will become distorted and unstable from the influence of any external magnetic fields.

f. When not in use turn off the camera, –keep the lens cap in place, keep the camera horizontal and well ventilated.

g. Save the carton and packing material for use in change of location of the camera.

2. Lighting

Optimum object illumination for model camera is 600 Lux. This illumination can be achieved with three 100 watts lamps. 150 Lux is the minimum illumination in the high mode for these cameras. Both the video output and the signal-to-noise ratio deteriorate when illumination is less that the specified minimum.

The low mode permits minimum illumination level of 15 Lux.

3. Operation

Signal connections

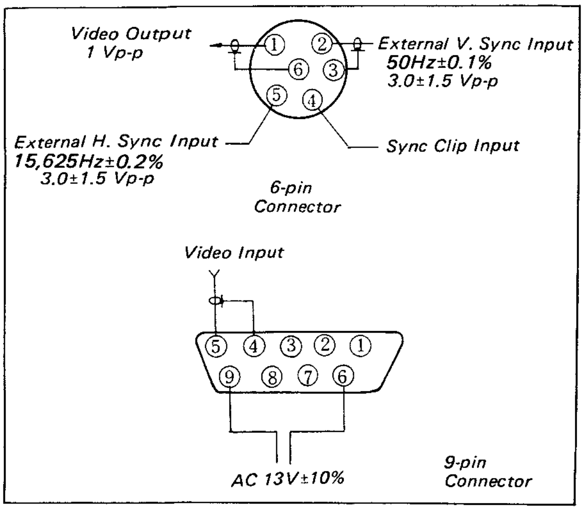


Fig. 1-1. Signal connections

Operation with a Videcorder

Connect the camera to the Videocorder using the camera cable with the 6 pin connectors, (cable CCF). To operate from a separate sync generator, Sony Model CG-3CE, use the EXT position of the sync selector and connect the camera to the sync generator using the camera cable with the 6 pin connectors (cable CCF). Connect the Videocorder to the camera via the UHF coaxial cable.

Alternately the videocorder can receive the video from the sync generator unit by way of the CCF connection to the camera.

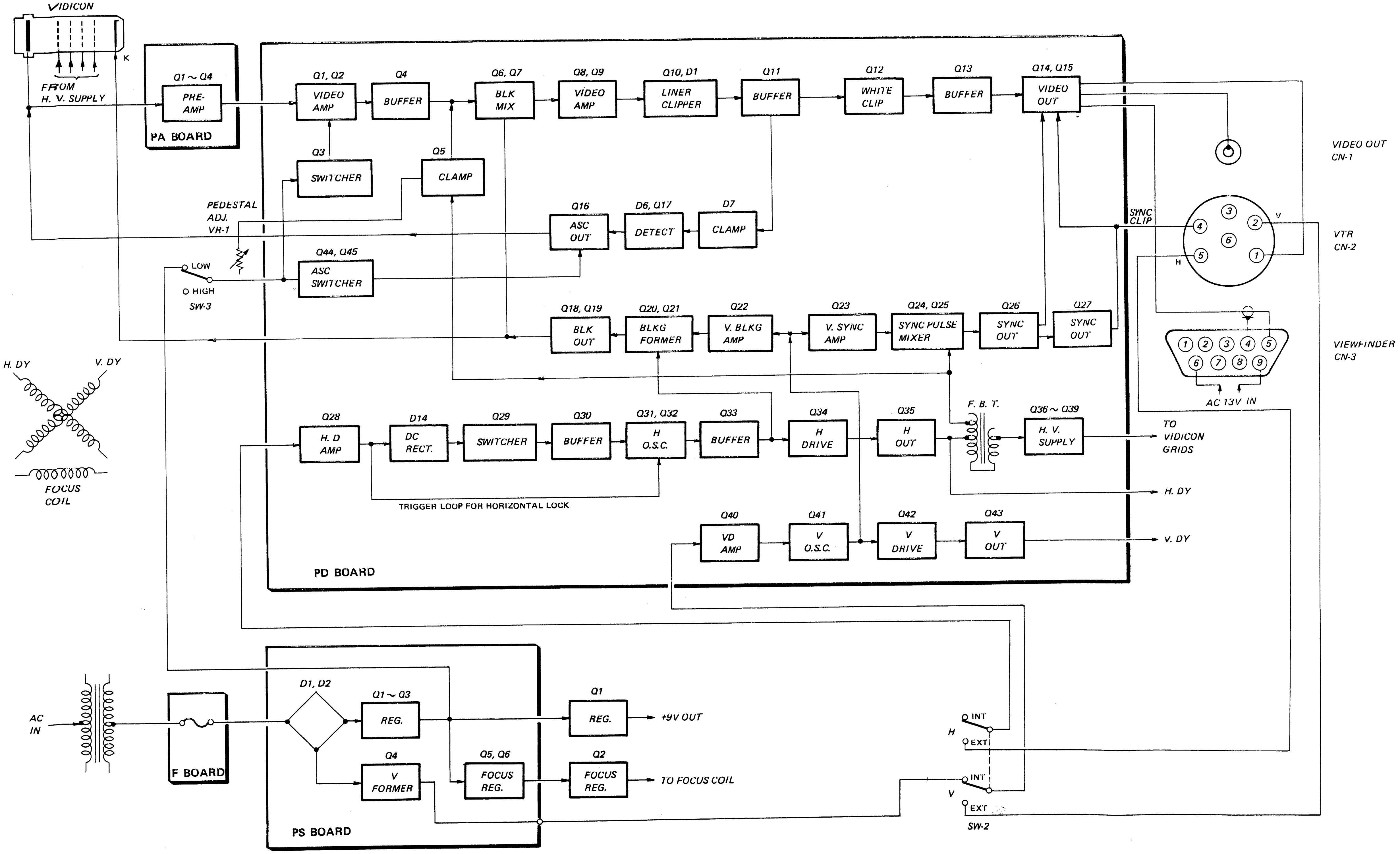
When using the AVC-3250CE camera with Internal sync the vertical sync is locked to the power line frequency and the horizontal sync is from the free running oscillator.

Operation with a video monitor or conventional TV receivers: the AVC-3250CE camera requires a separate RF modulator to generate a channel 3 (or other channel) TV signal to operate directly into the antenna input terminals of a conventional TV receiver or receiver/monitor. When using this RF connection arrangement the camera is operated in the INTernal sync mode.

SECTION 2

CIRCUIT DESCRIPTION

BLOCK DIAGRAM: AVC-3250CE


VIDICON
K
FROM
H. V. SUPPLY
Q1 ~ Q4
PRE-AMP
PA BOARD
Q1, Q2
VIDEO AMP
Q4
BUFFER
Q6, Q7
BLK MIX
Q8, Q9
VIDEO AMP
Q10, D1
LINER CLIPPER
Q11
BUFFER
Q12
WHITE CLIP
Q13
BUFFER
Q14, Q15
VIDEO OUT
VIDEO OUT
CN-1
Q3
SWITCHER
Q5
CLAMP
PEDESTAL ADJ.
VR-1
Q16
ASC OUT
D6, Q17
DETECT
D7
CLAMP
SYNC CLIP
V
VTR
CN-2
H
LOW
HIGH
SW-3
Q44, Q45
ASC SWITCHER
Q18, Q19
BLK OUT
Q20, Q21
BLKG FORMER
Q22
V. BLKG AMP
Q23
V. SYNC AMP
Q24, Q25
SYNC PULSE MIXER
Q26
SYNC OUT
Q27
SYNC OUT
VIEWFINDER
CN-3
AC 13V IN
H. DY
V. DY
FOCUS COIL
Q28
H. D AMP
D14
DC RECT.
Q29
SWITCHER
Q30
BUFFER
Q31, Q32
H O.S.C.
Q33
BUFFER
Q34
H DRIVE
Q35
H OUT
F. B. T.
Q36 ~ Q39
H. V. SUPPLY
TO VIDICON GRIDS
H. DY
TRIGGER LOOP FOR HORIZONTAL LOCK
Q40
VD AMP
Q41
V O.S.C.
Q42
V DRIVE
Q43
V OUT
V. DY
PD BOARD
AC IN
F BOARD
D1, D2
Q1 ~ Q3
REG.
Q1
REG.
+9V OUT
Q4
V FORMER
Q5, Q6
FOCUS REG.
Q2
FOCUS REG.
TO FOCUS COIL
PS BOARD
H
INT
EXT
V
INT
EXT
SW-2

2-1 Features

The AVC-3250CE video camera include the following features.

1. Light level switch – 2 position
    High Light level
    Low Light level
2. Pedestal level control
   Permits external adjustment of pedestal level.
3. Increased sensitivity preamplifier
    a. Provides higher resolution on strong signals (high contrast scenes)
    b. Provides better signal-to-noise ratio under poor light level conditions.
4. Rugged focus mechanism
   Provides increased mechanical strength and stability to withstand vibration, shock and temperature variations.
5. Electronic viewfinder AVF-3250CE
   Easily attaches and plugs into the camera power supply.
6. The cameras accept any C mount lens.

2-2 General

The AVC-3250CE uses three printed circuit boards, the Process and Deflection (PD) board, the Preamplifier (PA) board and the Power Supply (PS) board Refer to the disassembly section of this manual.

The vidicon is mounted inside a coil assembly directly behind the lens mount. This coil assembly contains the focus coil (outer) and the deflection coils (inner) all sharing a common axis.

2-3 VIDICON

The vidicon has a relatively long life and is a good low cost camera tube. The minor disadvantage of the vidicon is the image retention characteristic from an overly bright high contrast scene. The output current is approximately 0.2 μA and is amplified by the preamplifier electronics.

In the Low Light Level Mode the vidicon target voltage is increased to increase sensitivity. This also increases the dark current about one and half times to approximately 200 nA.

The preamplifier gain is increased by two in the Low Light Level Mode. (High Mode 1 V p-p output with 0.2 microamps input, Low Mode 1Vp-p output with 0.1 microamps input.) Video output from the vidicon is obtained from a spring connector that contacts the target ring at the lens end of the vidicon. This signal is routed directly to the preamplifier board. Beam intensity is adjusted by vidicon control bias. Spot focus is adjusted by focus coil current adjustment.

The target is made of a flat plate on which the optical image is focused by the lens. A photoconductive material is coated on the electron gun side of the faceplate to make the target. Contact is made to this coating by a metal ring built into the outer circumference and brought out through the glass.

The electron beam emitted by the cathode is controlled, accelerated, and focused by the voltages applied to the electrodes. The accelerating voltage is 300 volts. A mesh screen with 750 lines per inch between the target and the electron gun serves to provide a uniform electrostatic field to improve the uniformity of the beam landing on the target. The mesh has an applied voltage to form the electric field. The separate mesh type of vidicon features high uniform resolution and better response at the corners of the target. This type of vidicon also features very low picture distortion and negligible deterioration of resolution due to an excessive electron beam.

The target area is a uniformly deposited layer of photo conductive material. The electrical conductivity of the target is directly dependent on the intensity of light on the target, (more light-more conductivity).

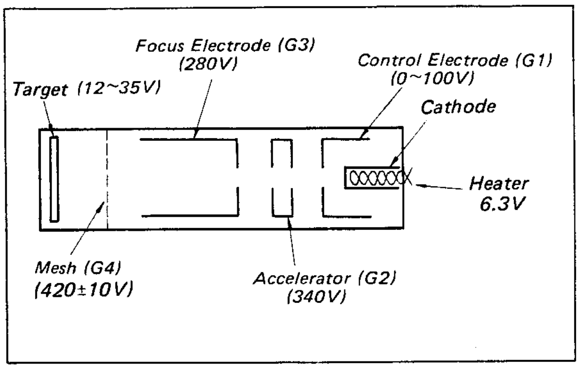


Fig. 2-1. Vidicon

2-4 VIDEO CIRCUITS

Automatic Sensitivity Control circuit (ASC)

The ASC circuit is used to maintain an approximately constant video output signal from the vidicon over a large range of light levels. Automatic Sensitivity Control is achieved by sampling the amplified video signal from video amplifier Q 11 output, (before the sync component is added) rectifying the video sample in diode D6 and amplifying in a DC

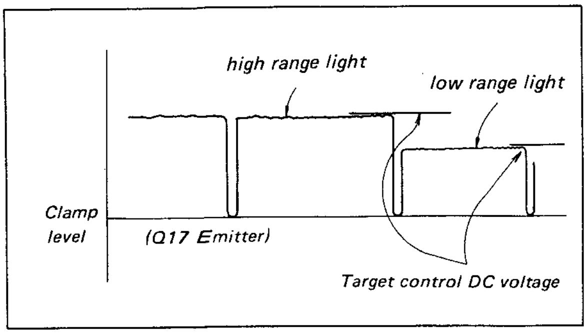


Fig. 2-2. ASC Target clamp level

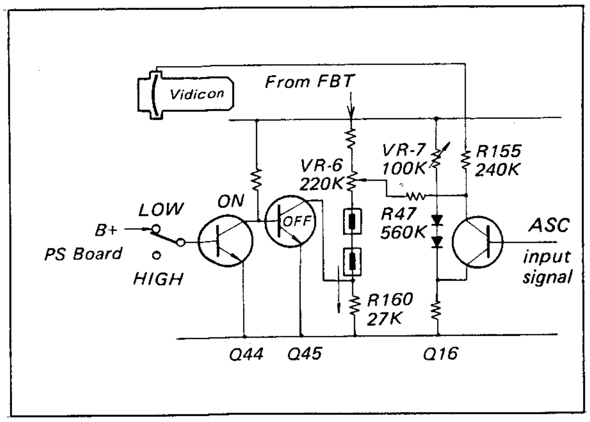


Fig. 2-3. Light sensitivity vidicon switch

amplifier, Q 16. The output of the amplifier Q 16 is shunted across the voltage source of the vidicon target load resistor. Thus as the video signal is increased due to increased illumination of the subject, the larger video signal provides a larger DC voltage which in turn causes a heavier load on the vidicon target source voltage.

The vidicon target voltage is thereby decreased and the camera sensitivity is reduced. When scene illumination lowers, the decrease in video signal feeds back a smaller signal and the shunt loading effect of Q 16 is reduced effectively raising the target voltage and raising the camera sensitivity. This feedback arrangement is self regulating and provides nearly constant output over a wide range of lighting conditions.

The vidicon output is preemphasized by a Percival cirucit. The Percival circuit is a parallel network of inductance and resistance inserted in series with the input signal applied to the gate of the first stage FET, of the preamplifier.

The inductance resonates with the high distributed capacitance of the vidicon target and output circuit in series with the preamplifier input capacitance. The Percival circuit most importantly isolates the vidicon output capacitance from the preamplifier input capacitance. This resonating and isolating effects an improved impedance match and improved signal transfer particularly for the higher video frequencies. The resistance lowers the resonant circuit Q and this limits the amplitude of the peaking.

The Preamplifier (PA) board.

The input signal enters the preamplifier through the Percival circuit. The three stage, directly coupled preamplifier of Q1, Q2, and Q3 incorporates an overall negative feedback loop which controls the gain of the upper video frequencies for purposes of compensation. The individual amplifier stages each employ an emitter peaking circuit to boost the high frequencies. Since the vidicon ouput signal has a very high signal-to-noise ratio, the effective signal-to-noise ratio of the FET preamplifier input stage (Q1) determines the practical signal-to-noise ratio of the camera.

The fourth transistor Q4 is an emitter follower to supply the preamplified video signal at low impedance to the video amplifier on the Process and Deflection board.

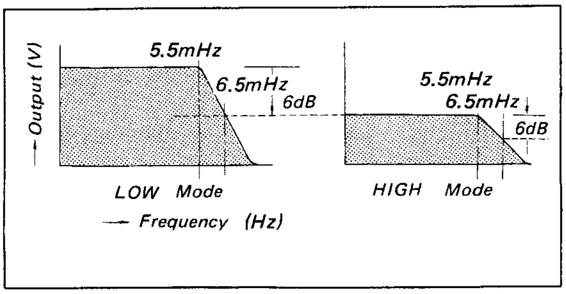


Fig. 2-4. Light level switch

The Process and Deflection board.

The input circuit of the video amplifier is made up of a two transistor complimentary coupled amplifier with a third transistor connected as a switch. The switching changes the filter components in the amplifier from a flat characteristic series filter to a parallel filter with frequencies below 3.5 mHz boosted by 6 dB. When the third transistor Q3 is switched off the filter components made up of two resistors, two capacitors and two inductors are all connected in series and provide a flat frequency response.

The switching transistor Q3, when switched on, grounds the midpoint of the filter string and the currents flow in the two filter paths in parallel, (each branch includes R, L, and C). Frequencies below 3.5 mHz are boosted and frequencies above 3.5 mHz conversely are attenuated, so that a 6 dB ratio exists between the two frequency ranges.

The vidicon target voltage is also changed by the Light Level switch. The Light Level switch, in the Low mode, turns on transistor Q44 which in turn switches Q45 off. Q45 is in paralled with R160, thus the current through the voltage dividier VR-6 and R160 decreases. The voltage on the wiper arm of VR-6 rises and thus the collector of Q16 also rises, which increases the vidicon target voltage. The increased target voltages raises the dark current output of the vidicon in the Low Light mode, as well as the vidicon sensitivity. See Fig. 2-3 and 2-4. Also as evidenced in Fig 2-5, the low frequency gain of the video amplifier, (below 3.5 mHz) is also boosted in the Low Light mode.

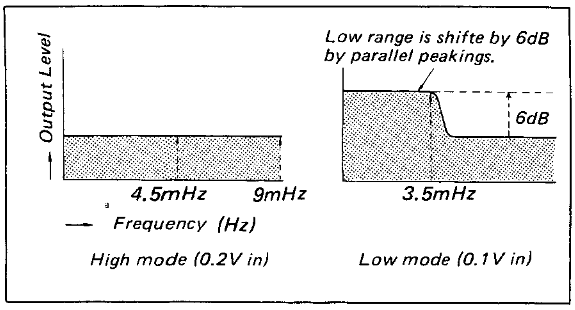


Fig. 2-5. Overall characteristic of Video Amplifier

The output of the complimentary coupled and switched video filter stage Q1, Q2 is impedance changed in emitter follower Q4 to a low impedance signal and supplied to the Q6 input of the pair of summing amplifiers Q6 and Q7. The signal path between Q4 and Q6 is shunted by the externally adjustable pedestal clamp, Q5. Amplifiers Q6 and Q7 share a common collector load impedance. The input to Q6 is the clamped video signal. The input to Q7 is the blanking signal. The output is the combined video and blanking signal.

The combined signal is amplified in Q8 and Q9, clipped in Q10 and buffered in Q11. The video output level is adjusted by control VR-2 in the emitter circuit of Q11. The signal is white level clipped by Q12. The clipped video signal and the sync signal are summed in Q13. Q13, Q14 and Q15 provide the signal gain at low impedance to perform the power amplification to drive the output cables and the viewfinder. The buffered signal level at Q11 is also sampled and supplied to the Automatic Sensitivity Control circuit, which is described in the initial paragraphs of paragraph 2-4, and shown in part in Fig 2-3.

The vertical sync and the horizontal sync are summed into a combined sync signal in the circuits of Q23, Q24, Q25, and Q26, Q27. Transistor Q23 is configured as a Miller Integrator and shapes the vertical oscillator signal prior to supplying the vertical signal to the input of Q24. Transister Q24 and Q25 form a summing amplifier with a common output. The input to Q25 is the horizontal sync pulse.

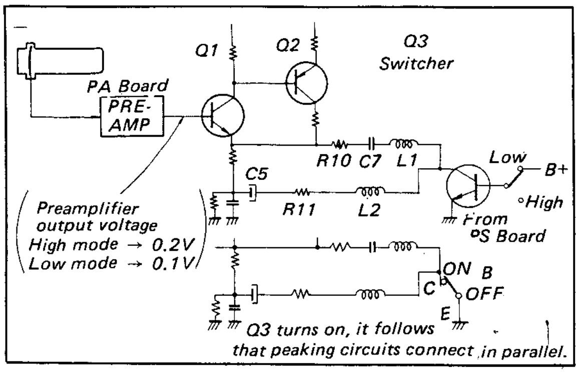


Fig. 2-6. Switcher operation

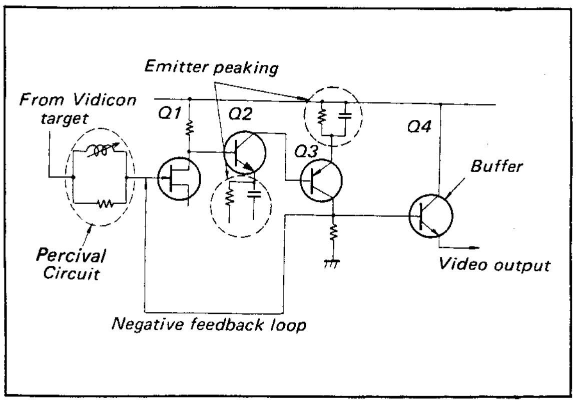


Fig. 2.7 Fig. 2-7. PA board

The two sync signals are combined in the common collector load resitance which is directly coupled into the base input of Q26 configured as a PNP emitter follower. The output of emitter follower Q26 is diode coupled to the base of emitter follower Q27. The base of emitter follower Q27 is also connected through a diode to pin 4 of the six pin connector. Thus if pin 4 of the six pin connector is grounded the input base of the emitter follower Q27 is grounded and Q27 has no output. The diode coupling between Q26 and Q27 permits Q27 to be grounded without an effect on Q26. The emitter resistor of Q27 terminates into a video signal bus inputting in to Q14 of the (PD) circuit board. The output of Q14 therefore is composite (video combined with sync) when pin 4 is not ground and non composite, (video only) when pin 4 is at ground. The output of Q14 is connected to pin 1 of the six conductor cable. Therefore remote grounding of pin

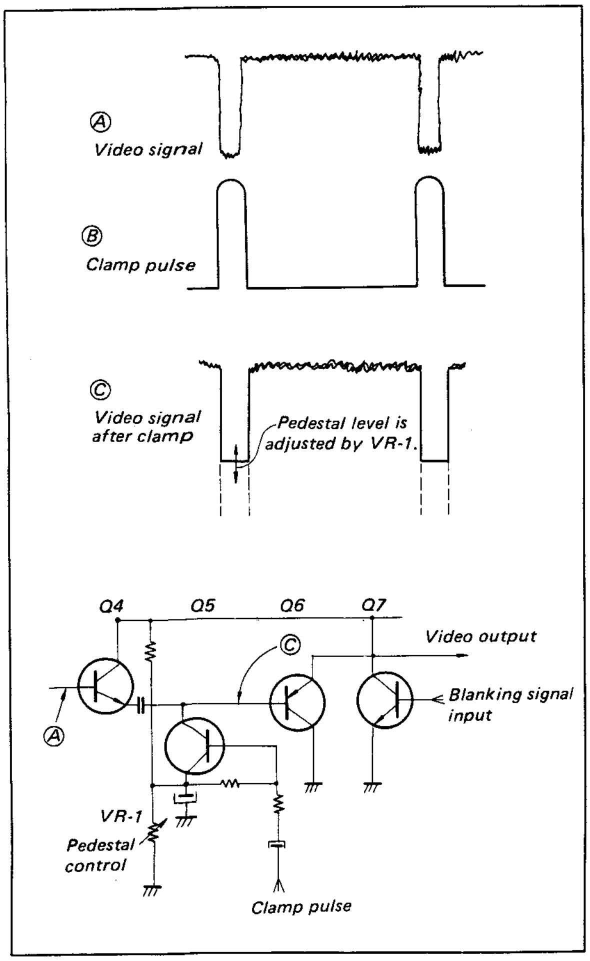

Ⓐ
Video signal
Ⓑ
Clamp pulse
Ⓒ
Video signal after clamp
Pedestal level is adjusted by VR-1.
Q4
Q5
Q6
Q7
Video output
Ⓒ
Blanking signal input
Ⓐ
VR-1
Pedestal control
Clamp pulse

Fig. 2-8 Pedestal clamp

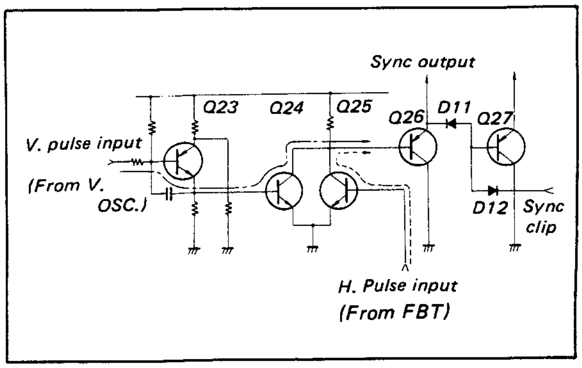

Sync output
Q23
Q24
Q25
Q26
D11
Q27
V. pulse input
(From V. OSC.)
D12
Sync clip
H. Pulse input
(From FBT)

Fig. 2-9. Sync mixer

4 controls the composite or noncomposite video on line 1.

The blanking signal for both video blanking and vidicon blanking is generated in the group of transistors Q18 through Q22.

Vertical oscillator output is supplied to Q22 where the signal is integrated and shaped. The output of Q22 is supplied to one input of the summing pair of Q20 and Q21. The other input receives the horizontal pulse signal. The common output has the combined vertical and horizontal waveforms and is amplified at low impedance by Q18 and Q19. The resultant signal is supplied as the video blanking and vidicon blanking signal.

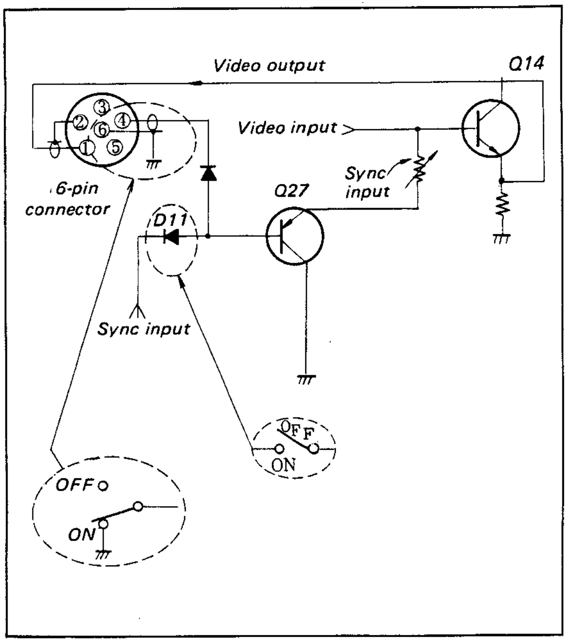

Video output
Q14
Video input
6-pin connector
Sync input
Q27
D11
Sync input
OFF
ON
OFF
ON

Fig. 2-10. Sync clip

Horizontal Deflection Circuit.

The horizontal deflection circuit operation is affected by the setting of the Sync switch. With external sync the Model AVC-3250CE camera circuit detects the presence of sync. The sync is rectified and DC amplified. The DC signal raises the bias of the horizontal oscillator so as to increase the period of oscillation (lowers the horizontal oscillator free-running frequency). The sync signal is turn however triggers the oscillator to cause the oscillator to be synchronized with the external sync generator.

When the external sync signal is absent the horizontal oscillator bias is lowered and the oscillator free runs at a higher frequency.

The horizontal oscillator signal is buffered in Q33 and supplied to a power amplifier Q34 and Q35, to provide the signal driving capability. The output drives the deflection coil of the vidicon and the fly back transformer. The high voltage of the flyback circuit is regulated and divided in the transistor string Q36 through Q39 and supplied to the proper vidicon electrodes.

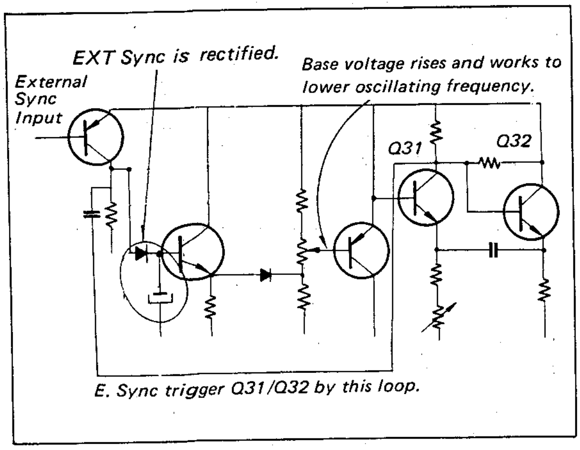

EXT Sync is rectified.
Base voltage rises and works to lower oscillating frequency.
External Sync Input
Q31
Q32
E. Sync trigger Q31/Q32 by this loop.

Fig. 2-11. Horizontal oscillator

Vertical Deflection Circuit.

A blocking oscillator is used for the vertical oscillator. The vertical sync signal (either external or internal) is applied to the base of Q40 for amplification and pulse shaping and supplied to trigger the blocking oscillator, Q41. The vertical oscillation is amplified in the Q43, Q44 power amplifier and supplied to the vertical deflection coils. The deflection coil reactance is sufficiently low so that the vertical voltage waveform is nearly sawtooth to provide a sawtooth current and resultant sawtooth shaped magnetic field and deflection.

Power Supply (PS) Board

The power supply furnishes regulated output voltage using transistors Q1 through Q3.

The series regulator transistor Q1 is connected in a Darlington circuit with a separately mounted transistor (also Q1) on a chassis heat sink.

A second constant current regulator supplies the current to the focus coil from transistors Q5 and Q6 on the PS board and also transistor Q2 on the separate heat sink mount on the chassis. Constant current is supplied to the focus coil even though the resistance of the focus coil changes with temperature.

SECTION 3
DISASSEMBLY

3-1 Cabinet Removal

1. Stand the camera in its normal position as shown in Fig. 3-1.
2. Remove the top panel by taking out the two screws at the top of the camera.
3. Turn the camera upside down as shown in Fig. 3-1.
4. Remove the side panels by taking out the four screws.

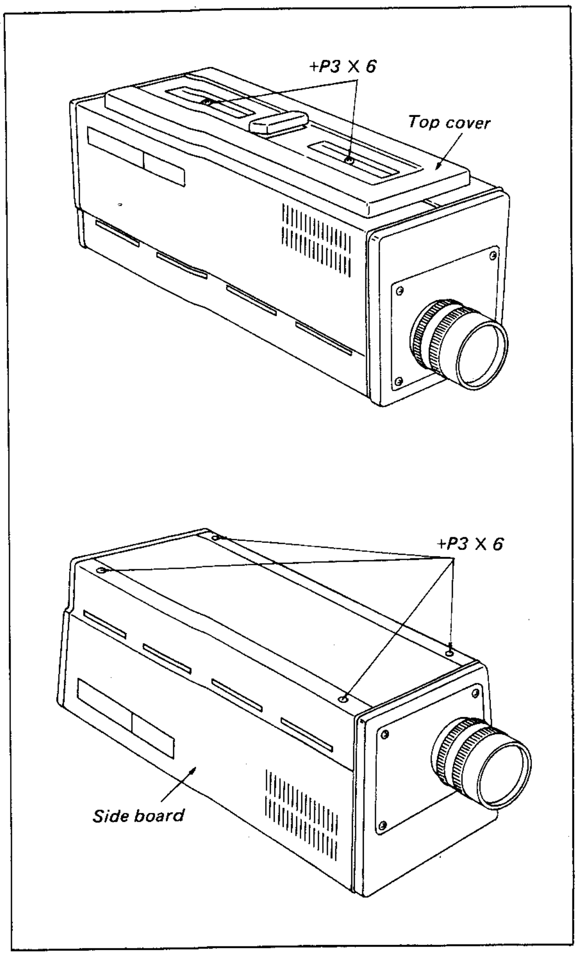


Fig. 3-1. Cabinet removal

3-2 Frame Assembly Replacement

When the frame assemblies are damaged, replace them as follows.
See Fig. 3-2 and 3-3.

1. Secure the escutcheon panel to the front panel assembly with the four screws.
2. Guide the five bosses of the front panel assembly into the holes of the chassis.
3. Mushroom the tips of the bosses with a soldering iron.
4. Use the same procedure to assemble the rear panel.

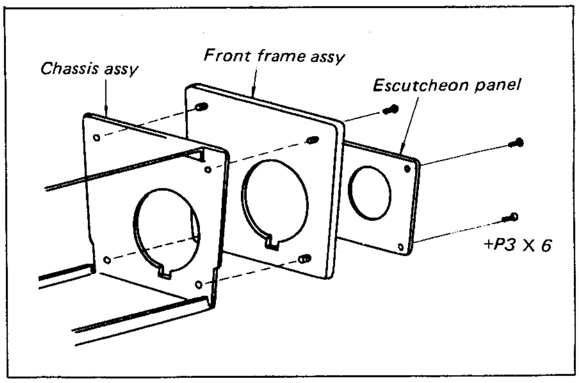


Fig. 3-2. Front frame removal

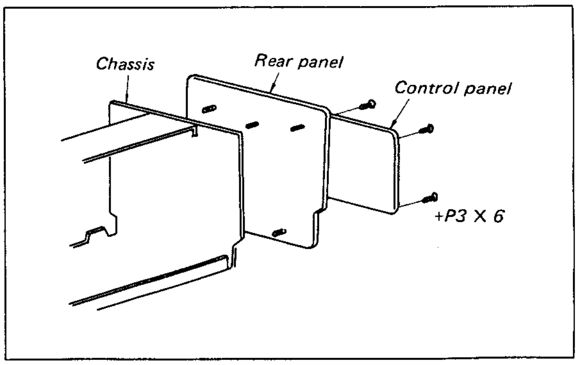


Fig. 3-3. Rear frame removal

3-3 PRINTED CIRCUIT BOARD REMOVAL

3-3-1 Process and Deflection (PD) board removal.

Remove the case

Remove the two screws on the metal bracket attached to the PD board as shown in fig, 3-4.

Remove the four SV terminals connected between the PD board and the Preamplifier board.

Remove the PD board by pulling the board out of the mating connector.

SV connections starting from the outer corner of the PD circuit board: Yellow
Red
Black
White/orange

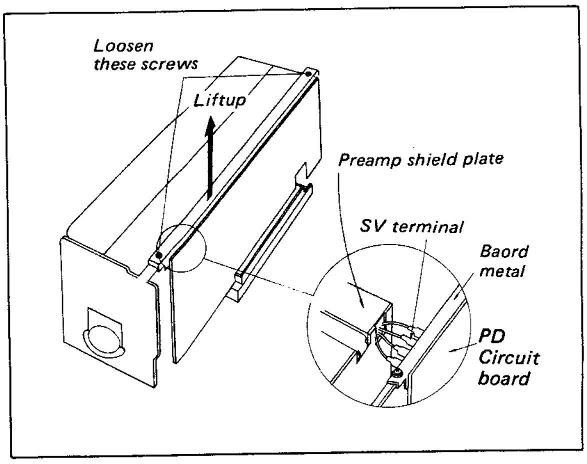

Loosen
these screws
Liftup
Preamp shield plate
SV terminal
Baord
metal
PD
Circuit
board

Fig. 3-4. PD circuit board removal

3-3-2 Preamplifier (PA) board removal.

Unscrew and remove the lens.

Remove the four screws retaining the front panel escutcheon. Remove the four flat head screws retaining the lens mounting plate. Note the plastic flanged insert in the back of the lens mounting plate, as the lens mounting plate is removed. On the front of the camera unsolder the target lead from the terminal just above the vidicon. The PA board is completely shielded. Remove the two screws retaining the PA assembly as shown in fig. 3-5. The PA board can be removed by passing the SV connections disconnected from the PA board, through the clearance hole in the PA shield case. To completely disconnect the PA board, the ground terminal to the vidicon shield must be unsoldered. The PA board is reinstalled in the reverse order.

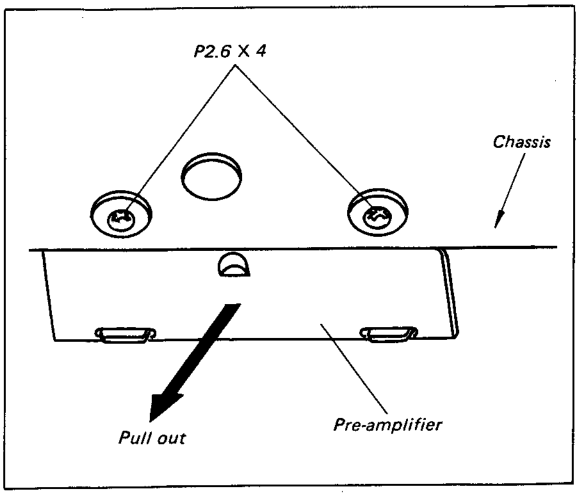

P2.6 X 4
Chassis
Pull out
Pre-amplifier

Fig. 3-5. PA circuit board removal

3-3-3 Power supply (PS) board removal.

Remove the two screws retaining the PS board bracket. Push the board out of the camera just enough so that the two screws holding the bracket to the circuit board can be removed allowing removal of the bracket.

The PS Circuit board can then be pushed through and out of the camera assembly on the opposite side. The PS board is not electrically disconnected and can be used for testing while supported on its leads.

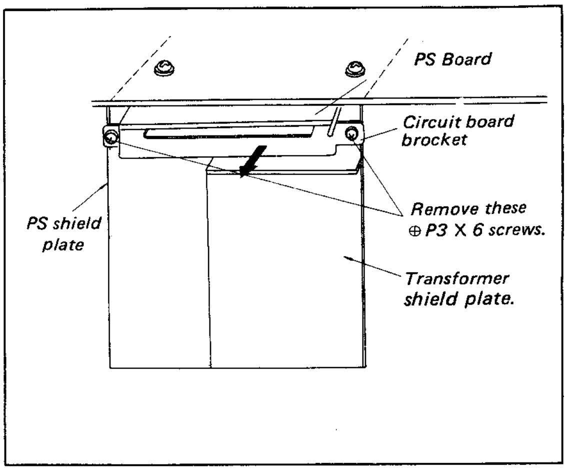

PS Board
Circuit board
brocket
Remove these
⊕ P3 X 6 screws.
PS shield
plate
Transformer
shield plate.

Fig. 3-6. PS circuit board removal

3-4 CONNECTOR REMOVAL

To remove the rear panel connectors and the pilot lamp from the connector panel, proceed as follows. See Fig. 3-3.

1. Remove the four screws from the connector panel.
2. Remove the connector panel.
3. Remove the PD board: refer to paragraph 3-2.
4. Unsolder the leads connected to the connectors
5. Remove the nut(s) from the connector(s).
6. Remove and replace the connector(s) and or the pilot lamp.
7. Reassemble the panel in the reverse order.

3-5 VIDICON REPLACEMENT

1. Remove the four screws from the escutcheon panel (P2.6×6).
2. Loosen the four screws from the lens mount.
3. Disassemble the vidicon holder, the vidicon

spring, the vidicon socket etc.

4. Remove the vidicon from the deflection yoke.
5. Replace the vidicon properly seating it in the socket.
6. Reassemble the vidicon spring and the vidicon holder.
7. Reassemble the lens mounting plate with the flanged plastic collar inserted into the back of the mounting plate. The mounting plate must be pressed against the vidicon which is spring loaded against the lens mounting plate. Be sure to locate the slot, in the lens mounting plate, downward, so as to permit access with the focus adjustment jig (or screwdriver if the jig is not available).
8. Complete the procedures of section 4-6-9 Centering, Size and Linearity. Section 4-6-10 Magnet Alignment. Section 4-7 Video Alignment.

3-6 DEFLECTION YOKE REMOVAL

1. Remove the vidicon as in section 3-5.
2. Unsolder the deflection coil leads from the terminals on the internal connector for the PD board. Make note of lead locations and color.
3. Place the camera upside down.
4. Remove the deflection yoke assembly from the chassis by removing the four retaining screws.
5. Disassemble the yoke assembly and reassemble with the replacement yoke.
6. Replace the deflection yoke assembly in the chassis and solder the cable in place.
7. Replace the vidicon and lens assembly.
8. Complete the alignment procedures of sections
   4-6-9 Centering, Size, and Linearity;
   4-6-10 Magnet Alignment
   4-7 Video Alignment.

SECTION 4
ALIGNMENT

4.1 Required Equipment

Sync Generator	Sony CG-3CE
Tripod	Sony VCT-20A
Video Monitor	Sony CVM or PVM Monitor
Lens	Sony Standard Lens Supplied
Zoom Lens	Sony VCL-1206; or VCL-16B
Cables	UHF Coaxial Cable 6 conductor CCF cable
Test pattern	180 mm X 240 mm
Fluorescent lamp or	Equivalent
Volt-ohmmeter	Simpson 260 or equal
VTVM	HP 3300A with 3305A plug-in or equal
Oscilloscope	Tektronix 561, or 422 or equal.

4-2 PRELIMINARY SETUP

1. Connect the camera and monitor with the UHF coaxial cable. Connect the sync generator to the camera with the 6 conductor plug and cable.

2. Uniformly illuminate the test pattern with about 600 Lux. Two 20 watt fluorescent lamps about a meter from the pattern will be satisfactory.
The ASC circuit operates best above light levels greater than 600 Lux.

3. The distance between the test pattern and the lens mounting ring must be precise, to properly fill the vidicon target.
The distance can be determined by the test pattern height and the focal length of the lens using the following equation;

Subject distance (mm) =

$$\frac{\text{F.1.}\,(h+6.3)}{6.3} - \frac{\text{F.1.}\,(h+6.3)}{h} - 17.526$$

F.1 lens focal length in mm
h test pattern height in mm

In the case where the height of the test pattern is 180 mm and the lens focal length is 16 mm the correct distance is 439 mm.

4. Install the standard lens on the camera.

5. Align the center of the lens and the center of the test pattern, with the camera perpendicular to the test pattern.

6. Rotate the lens barrel for optimum focus. Read the indicated focus distance on the lens barrel scale. The indicated focus should be approximately correct. If not correct and the camera is not to be used with a zoom lens, adjust the mechanical position of the vidicon as in step 7.

7. To adjust the vidicon position first adjust the lens barrel to the proper focus setting on the scale. Insert the alignment jig as shown in fig 4-3. Turn the jig clockwise or counterclockwise for optimum focus. (This adjustment is also used to make the zoom lens track properly and so is prescribed below when using the zoom lens.

8. Switch the monitor to underscan. Play back the Monoscope portion of the VTR Alignment tape to adjust the monitor size and linearity.

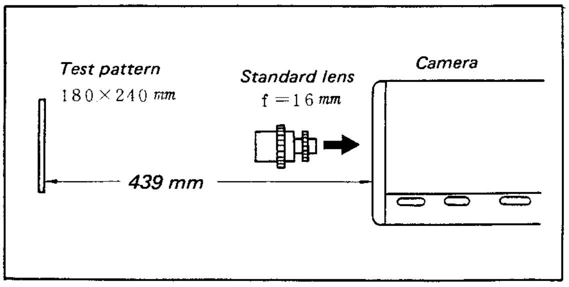


Fig. 4-1. Preliminary Set-up

4-3 ZOOM LENS TRACKING ADJUSTMENT

1. Remove the lens from the lens mount.
Rmove the escutcheon.

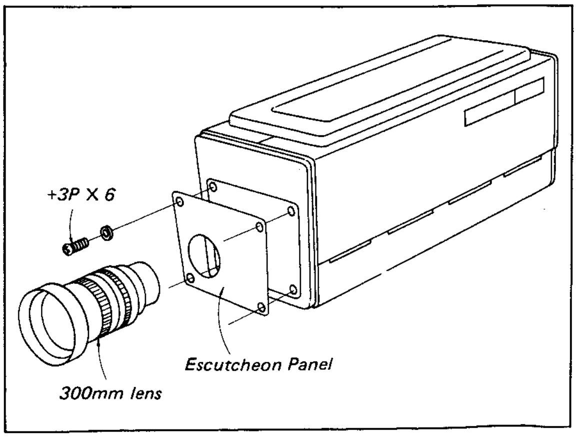


Fig. 4-2. Zoom Lens Tracking Adjustment

2. Place the viewfinder on the camera. Connect the video monitor by means of the UHF cable.
3. Install the zoom lens. Point the camera at an object appr oximate 10 meters away. Rotate the zoom, to the telephoto position. Focus the image by adjusting the focus ring on the lens.
4. Without readjusting the focus ring on the lens verify correct focus at the wideangle position of the zoom adjust. If not at optimum focus then perform the following step 5.
5. Insert the alignment jig shown in Fig. 4-3 and turn the jig clockwise or counterclockwise for optimum focus.

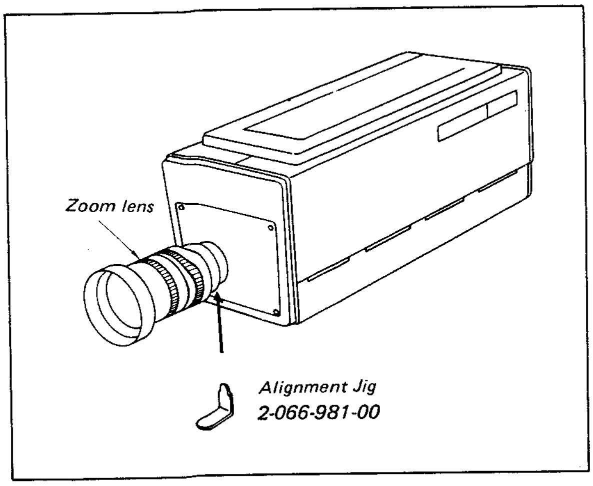


Fig. 4-3. Optical Focus Adjustment

6. Recheck the focus at both ends of the zoom adjust (telephoto and wideangle). Confirm correct focus througout the zoom range.
If the alignment jig is not available a small 2mm screwdriver can be used with extra care. The vidicon can be damaged if the screwdriver is inserted too far.

4-4 STEPS OF THE ADJUSTMENT PROCEDURE

4-5 Power supply
↓
4-6 Deflection System

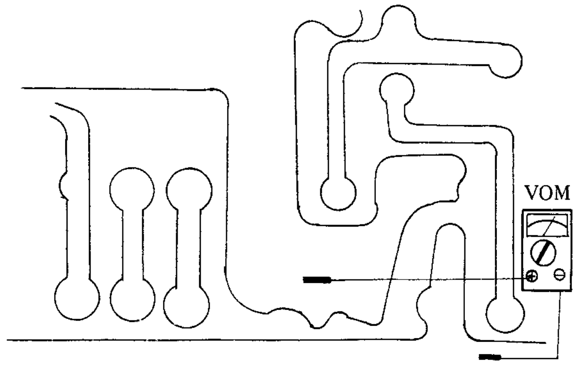
Horizontal
↓
4-6-1 frequency
↓
-2 lock check
↓
-3 blanking pulse width
↓
-7 High voltage check
↓

Vertical
↓
-4 frequency
↓
-5 lock check
↓
-6 blanking width
↓

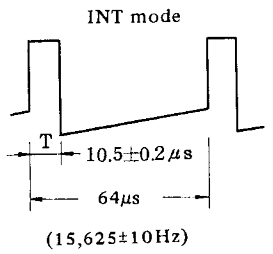
-8 Deflection yoke (DY) tilt
↓
-9 Deflection (H + V) centering, size, linearity
↓
-10 Beam Alignment Magnet

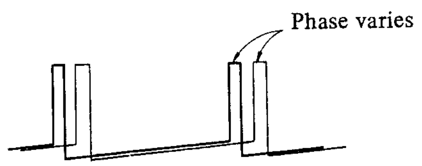
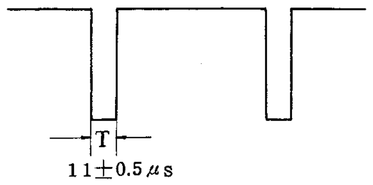
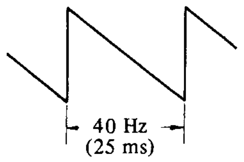
4-7 Video
4-7-1 Beam current initial
↓
-2 Dark level
↓
-3 Sync level
↓
-4 Sync tip
↓
-5 Focus
↓
-6 Pedestal level
↓
-7 ASC initial level
Video output level
↓
-8 ASC final level
↓
-9 White clip level
↓
-10 Beam
↓
-11 Resolution

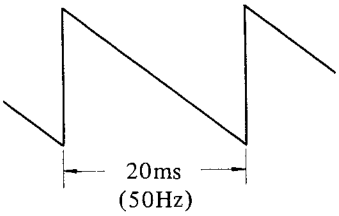
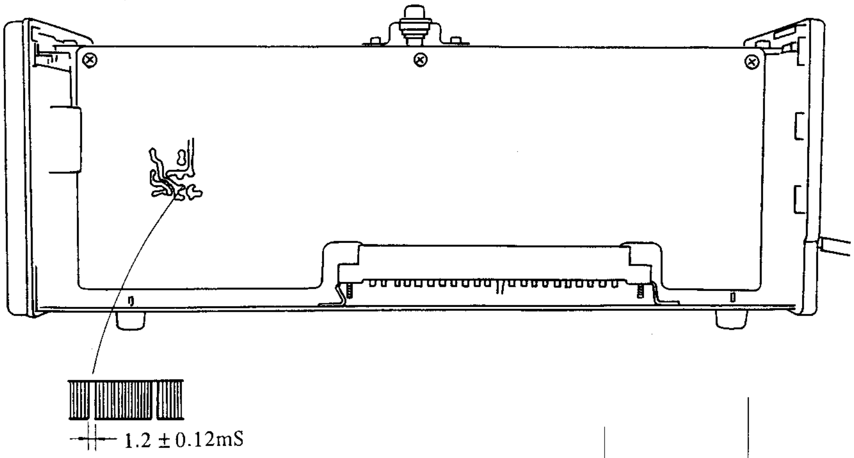
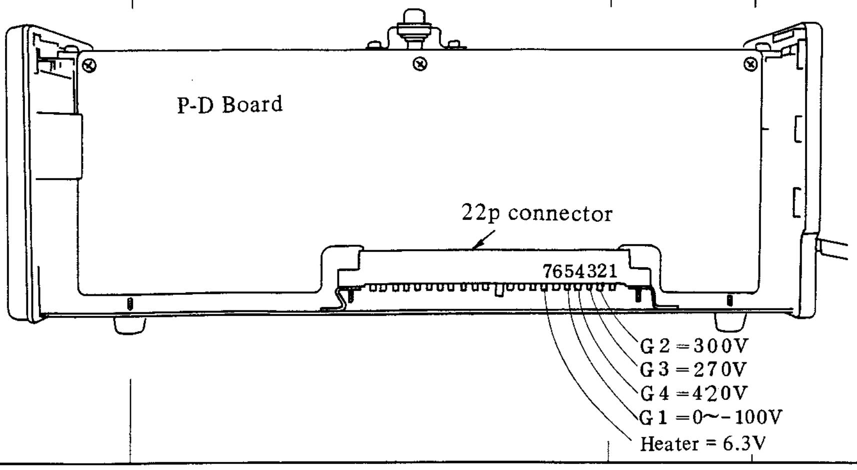
4-5 POWER SUPPLY

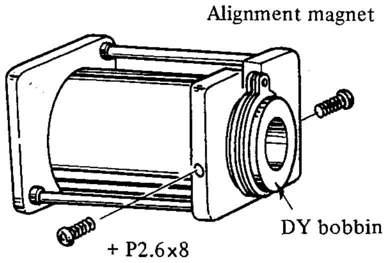
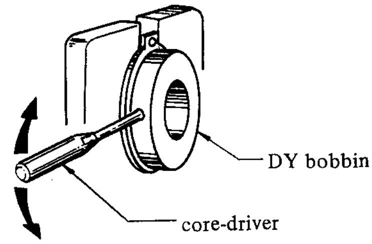
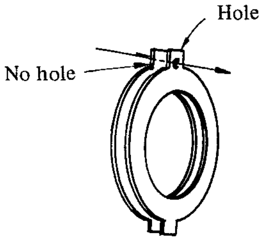
Adjustment	Test point/ Board	Procedure and Value	Control	Object	Equipment Required
4-5-1 9V Supply	PD Q2 Collector	Value: 9 ±0.1V 	VR-1		VOM

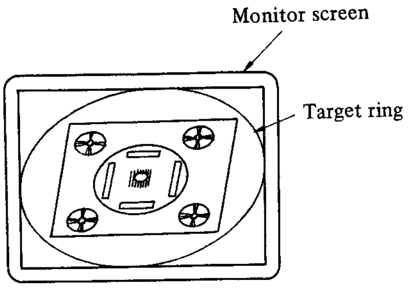
4-6 DEFLECTION SYSTEM

Adjustment	Test point/ Board	Procedure and Value	Control	Object	Equipment Required
4-6-1 Horizontal Frequency (Free-running)	TP-4/PD	1. Set VR-8 to midrange. Adjust VR-16 for pulse width of T=10.5±0.2 us. 2. Readjust VR-8 for 64 μs period. (15,625±10 Hz) Note: To obtain free running Horizontal oscillator:– 	VR-16 (H. Pulse Width) VR-8 (H. Freq)		Oscilloscope (Counter)
4-6-2 Horizontal Lock Check	TP-4/PD	Connect sync generator, CG-3CE to the 6 pin connector without power to the sync generaotr, Switch sync generator power ON-OFF.			Oscilloscope

Adjustment	Test Point/ Board	Procedure and Value	Control	Object	Equipment Required
					
4-6-3 Horizontal blanking pulse width	PD Q-18 emitter	Verify pulse width at Q18; emitter of T=11±0.5μs. 			Oscilloscope
4-6-4 Vertical Frequency (free-running)	TP-1/PD	Sync switch to external-sync generator not connected. Adjust VR-12 for 40 Hz (or 25 ms period). 			Counter (Oscilloscope)
4-6-5 Vertical Lock check	TP-7/PD	Switch Sync selector from EXT-INT. Confirm that the vertical locks to 50 Hz with a period of 20 ms with			Oscilloscope

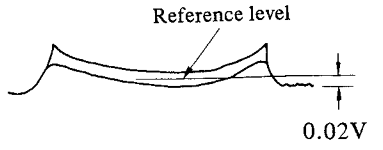
Adjustment	Test Point/ Board	Procedure and Value	Control	Object	Equipment Required
		either sync generator switched on, (or Sync switched to INT.)  			
4-6-6 Vertical Blanking Pulse Width	Q18/PD	On emitter cf Q18 confirm pulse width of T=1.2ms±0.12ms  			Oscilloscipe
4-6-7 High Voltage check	TP-6/PD	 P-D Board 22p connector 7654321 G2 =300V G3 =270V G4 =420V G1 =0~-100V Heater = 6.3V	VR-11		VOM (VTVM)

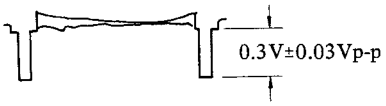
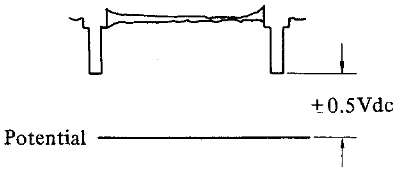
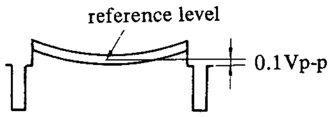
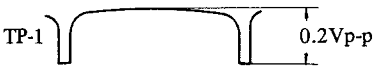
	Test Point/ Board	Procedure and Value	Control	Object	Equipment Required
4-6-8 Deflection Yoke Tilt	Monitor	Loosen the two screws P2.6x8 which hold the deflection yoke as shown below. Insert the core driver into the DY hole. Rotate the deflection yoke to eliminate tilt. Replace screws.  	DY bobbin		Monitor
4-6-9 H+V Centering, Size, Linearity		Set the distance, the lens, and the test pattern as indicated in paragraph 4-2 (steps 3, 4, and 5). (Preliminary set up) Set the alignment magnets as shown below 			Illuminated test pattern
Centering	Monitor	Increase deflection by adjusting VR-13. Vertical linearity and L-5 Horizontal Width, Adjust VR-15 Vertical centering so that vidicon target ring is visible on all four corners.	VR-13 (V.Line) L-5 (H.Width)	Standard operating condition	Monitor

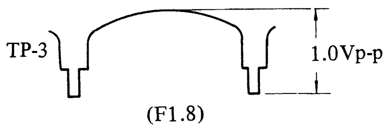
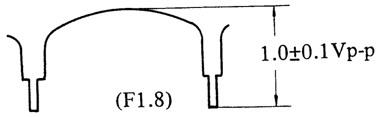
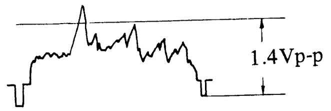
Adjustment	Test Point/ Board	Procedure and Value	Control	Object	Equipment Required
			VR-9 (H.Cent) VR-14 (Height)		
Size, Linearity	Monitor	Adjust VR-13 Vertical Linearity, L-5 width, and VR-14 height, to full the screen with the test pattern. Use underscan on the monitor.	VR-13 (V.Line) VR-14 (Height) L-5 (H.Width)		Test Pattern
4-6-10 Beam Alignment Magnet	Monitor	Adjust the beam alignment magnet, so that shading, flicker, ripple, electrode reflection, and picture distortion are minimum. Readjust centering (4-6-9) Confirm resolution at corners of 400 line minimum.	Alignment Magnet		Test Pattern

4-7 VIDEO SYSTEM ALIGNMENT

Note: It is necessary to perform the complete video adjustment at one time, (section 4-7-1 to 4-7-11). Do not perform a partial alignment, because interaction of the circuitry will degrade performance.

4-7-1 Beam current tentative adjustment	Monitor screen	Set VR10 (Beam) initially so that a picture can be observed on the monitor screen.	VR-10/PD (Beam)	Standard operating condition	Monitor
4-7-2 Dark level	TP-1/PD	LOW mode Put the lens cap on the lens before this adjustment. 	VR-6/PD (Dark)	None required	Oscilloscope

Adjustment	Test Point/ Board	Procedure and Value	Control	Object	Equipment required
4-7-3 Sync level	TP-2/PD TP-3/PD	Terminate output with 75 ohms 	VR-4/PD VR-5/PD (Sync level)	None Required	Oscilloscope
4-7-4 Sync Tip Voltage	TP-2/PD TP-3/PD	Terminate output terminal with 75 ohms  After this adjustment, confirm dark level adjustment, Section 4-7-2	VR-1/PD (Clamp)	None required	Oscilloscope
4-7-5 Focus	Monitor screen	Adjust VR-2 (Focus) for the best possible focus of the test pattern on the monitor screen.	VR-2/PS (Focus)	Standard operating condition	Monitor
4-7-6 Pedestal level	TP-3/PD	Place the lens cap in place and adjust VR-1 (Pedestal) under the connector panel. (HIGH mode) 	VR-1 (Pedestal)	None required.	Oscilloscope
4-7-7 ASC initial and video output level adjustment	TP-1/PD	(HIGH mode) A. Set the iris of the lens for F1.8, then asjust VR-7 for 0.2Vp-p at TP-1. 	VR-7/PD	Standard operating condition	Oscilloscope
	TP-3/PD	(2) Adjust VR-2 (video level) for 1.0Vp-p video signal at TP-3/PD (video out)	VR-2/PD (video)		

Adjustment	Test Point/ Board	Procedure and Value	Control	Object	Required equipment
		 Recheck the Pedestal level (section 4-7-6) and Sync Clip level (section 4-7-4) after this adjustment			
4-7-8 ASC final level	TP-3/PD	A. Set the iris of the lens to F1.8, then adjust the video level to obtain 1.0±0.1Vp-p at TP-3. B. Verify that the signal at TP-1 is 0.2Vp-p. C. Check the video level when changing the iris as follows F2.8 F4 } 0.9±0.1Vp-p 	VR-7/PD (ASC)	Standard operating condition	Oscilloscope
4-7-9 White Clip	TP-3/PD	Set the iris of the lens to F1.8, then pan the camera at a high contrast object. Make the adjustment rapidly as the vidicon can be burnt. 	VR-3/PD (White clip)	Normal picture	Oscilloscope
4-7-10 Beam	TP-1/PD	A. Fully open the iris of the lens. B. Pan the camera at a low contrast object. C. Adjust VR-10 for 0.4Vp-p.	VR-10/PD (Beam)	Normal Picture	Oscilloscope
4-7-11 Resolution Check	Monitor	Confirm that resolution in each mode satisfies the specification value. High mode 550 lines at the center 400 lines at the corners Low mode 450 lines at the center 300 lines at the corners		Standard operating condition	Monitor Resolution chart

SECTION 5

TROUBLESHOOTING GUIDE

General

The following checklist is suggested should difficulty be experienced. Specific areas of the camera and system that might be the cause are suggested for troubleshooting.

1. No Picture
   normal raster- no raster
2. Insufficient brightness
3. Reversed picture
4. Dark at top and bottom of picture
5. Poor resolution
6. Insufficient picture size
7. Insufficient luminance
8. Flicker in picture
9. Picture not stable
10. Noise in picture

5-1 NO PICTURE

Normal Raster

A. Check video system

1. Touch preamplifier input for noise on raster.
2. If noise is not evidenced, troubleshoot preamplifier. Refer to section 4-6-7.
3. If noise is in evidence

B. Check vidicon

1. Traget ring spring connection?
2. Deflection coil?
3. Vidicon voltages?
4. If voltages are not correct, troubleshoot the High voltage section, including the flyback, transformer.
5. If voltages are correct, replace the vidicon.

No Raster

A. Check power supply Section

1. Fuse?
2. Power switch?
3. Diode rectifiers?
4. Regulator series transistor?
5. Power transformer?
6. Vidicon heater?
7. Other

B. Check Deflection System

1. Horizontal output?
2. Horizontal oscillator?
3. Vertical output?
4. Vertical oscillator?
5. Deflection yoke?

5-2 INSUFFICIENT BRIGHTNESS

Check Video System

1. TP-3 for 2V p-p
2. If not correct verify correct transistor supply voltage
   If TP-3 voltage is correct
3. Pedestal clamp level?
4. Target voltage? Refer to 4-7-2
5. Video output level? Refer to 4-7-7 Adjust VR-2
6. Beam setting? Refer to 4-7-10 Adjust VR-10
7. High voltage?
8. Vidicon electrode voltage? Refer to 4-6-7
9. Other?

5-3 NEGATIVE PICTURE

Check video system

1. Vidicon target voltage? Refer to 4-7-2 Adjust VR-6.
2. Beam level? Refer to 4-7-10 Readjust Beam.
3. White Clip Level? Refer to 4-7-9 Readjust White Clip Level.
4. Other?

5-4 DARK AT TOP AND BOTTOM OF PICTURE.

Check Deflection system

1. Waveform at TP7? Refer to 4-6-5 Adjust VR-13.
2. Blanking pulse width?

5-5 POOR RESOLUTION

Check focus system

1. Power supply? Adjust VR-21/PS.
2. Vidicon faceplate for cleanliness?

Check video system

1. Target ring contact?
2. Contacts on 22P connector?
3. Excessive beam level? Adjust VR-10.
4. Optical focus? Adjust.

5-6 INSUFFICIENT PICTURE SIZE

Check Deflection system

1. Centering? Adjust VR-8, VR-15.
2. Waveforms at TP-5 and TP-7? Adjust L5+VR14.
3. Deflection yoke assembly?

5-7 INSUFFICIENT LUMINANCE

Check video system

1. Illumination of subject? – Increase illumination.
2. Lens cleanliness?
3. Vidicon faceplate?
4. Shading more than subject? Adjust alignment magnet.
5. Target voltage? Adjust VR-6
6. Video output level?
7. Replace vidicon?

5-8 FLICKER IN PICTURE

High voltage system

1. High voltage ripple?

Video system

1. Alignment magnet adjustment? Readjust centering.

Sync system

1. Verify H+V frequencies? Adjust VR-8, VR-12
2. Pedestal clamp?

5-9 PICTURE NOT STABLE

High voltage system

1. Ripple on vidicon electrodes?
2. Ripple on focus current?
3. Ripple on low voltage supply?
4. Monitor?

5-10 NOISE IN PICTURE

System connection

1. PCB connector?
2. Target ring connector?
3. Cold solder joints?

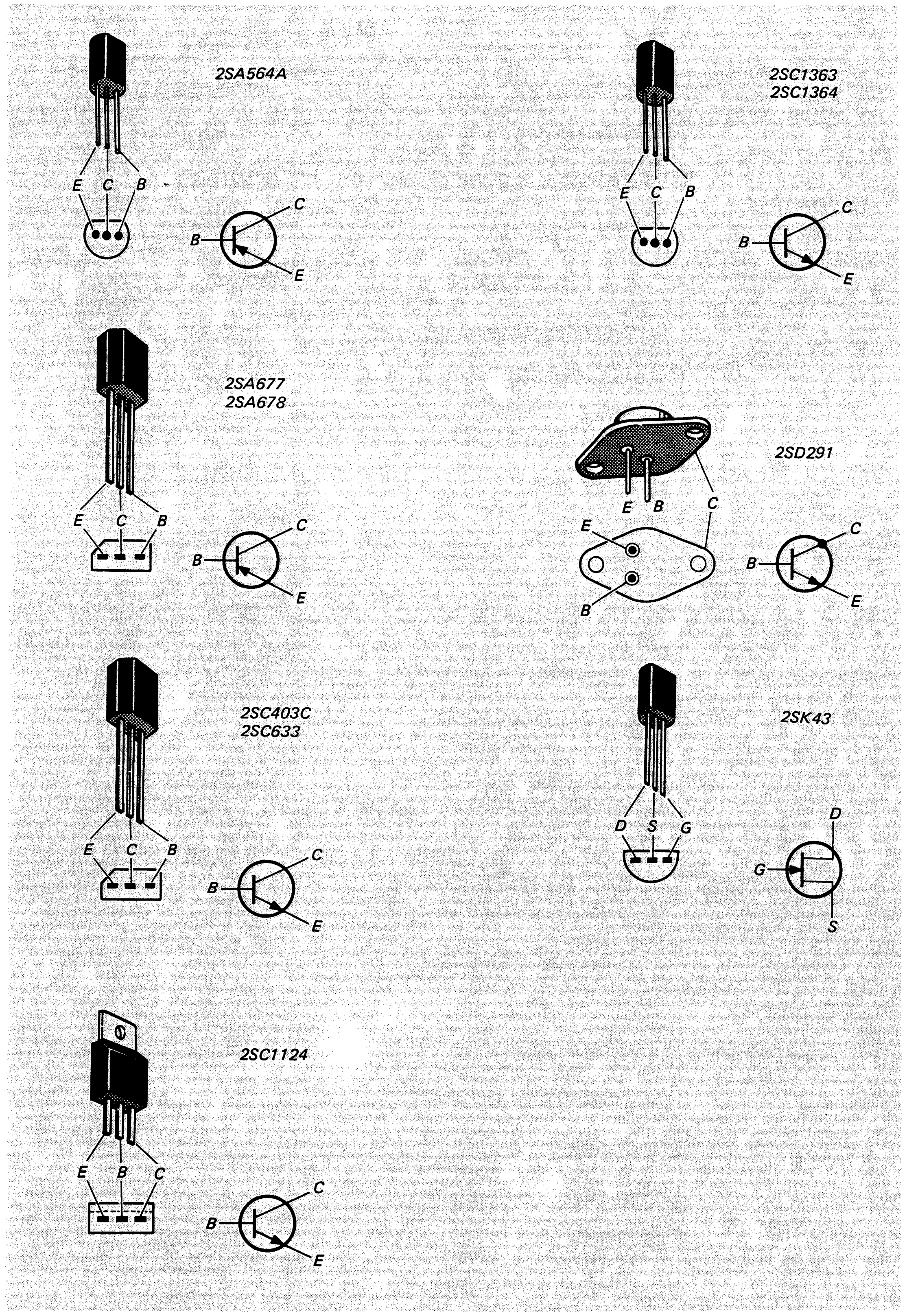
Video system

1. Target voltage?
2. Low light intensity?
3. Video amplifier oscillating?
4. External radio interference?

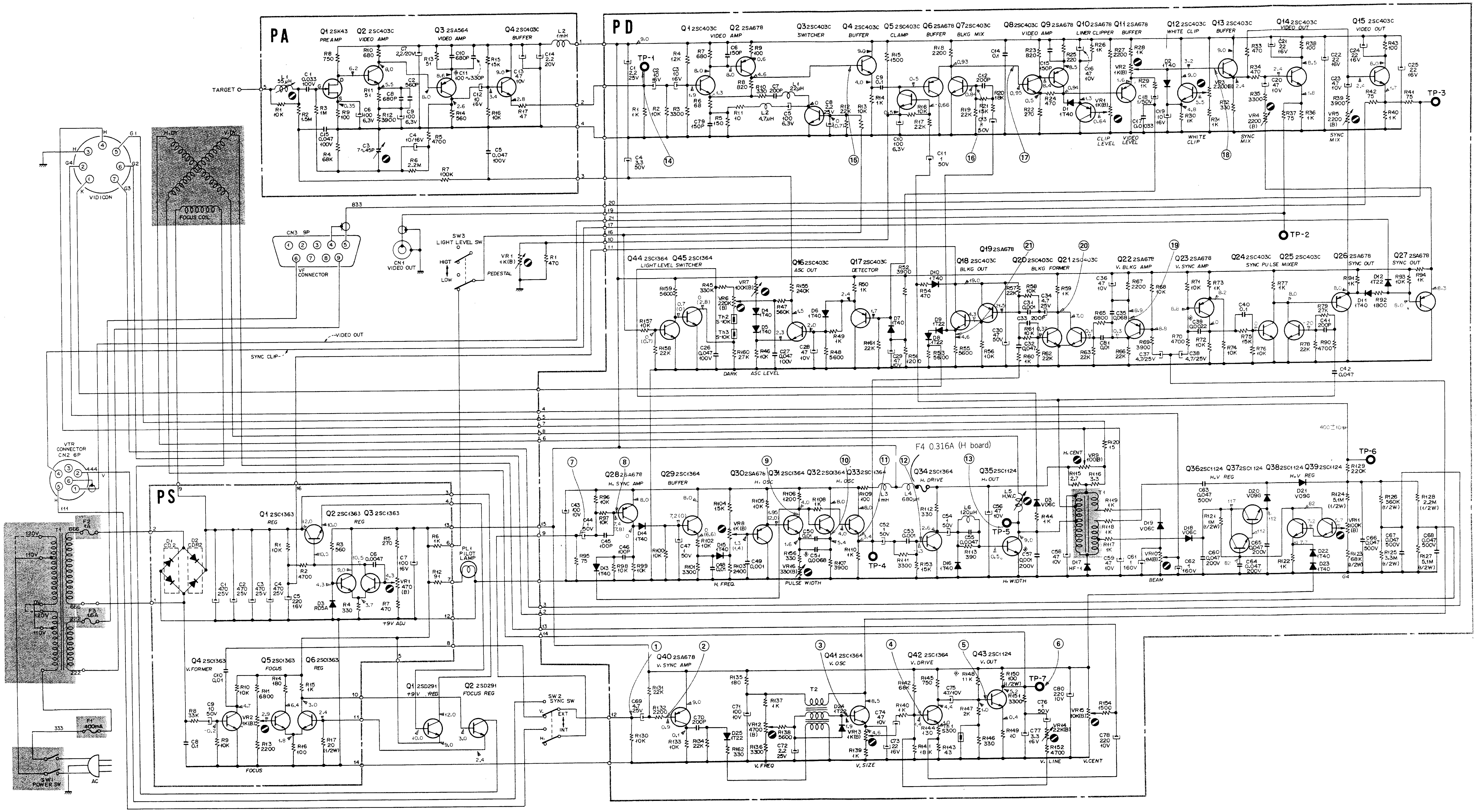
SECTION 6

PRINTED CIRCUIT BOARD AND SCHEMATIC DIAGRAM

SEMICONDUCTOR ELECTRODES

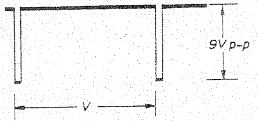

2SA564A
E C B
B C E
2SC1363
2SC1364
E C B
B C E
2SA677
2SA678
E C B
B C E
2SD291
E B C
E B
B C E
2SC403C
2SC633
E C B
B C E
2SK43
D S G
G D S
2SC1124
E B C
B C E

AVC-3250CE SCHEMATIC DIAGRAM


PA
PD
PS
TARGET
VIDICON
H.DY
V.DY
FOCUS COIL
CN3 9P
VF CONNECTOR
CN1 VIDEO OUT
SW3 LIGHT LEVEL SW
HIGH
LOW
VR1 1K(B) PEDESTAL
VTR CONNECTOR CN2 6P
F2 1A
F3 1.6A
F1 400mA
SW1 POWER SW
AC
120V
110V
Q1 2SK43 PREAMP
Q2 2SC403C VIDEO AMP
Q3 2SA564 VIDEO AMP
Q4 2SC403C BUFFER
Q1 2SC403C
Q2 2SA678 VIDEO AMP
Q3 2SC403C SWITCHER
Q4 2SC403C BUFFER
Q5 2SC403C CLAMP
Q6 2SA678 BUFFER
Q7 2SC403C BLKG MIX
Q8 2SC403C VIDEO AMP
Q9 2SA678
Q10 2SA678 LINER CLIPPER
Q11 2SA678 BUFFER
Q12 2SC403C WHITE CLIP
Q13 2SC403C BUFFER
Q14 2SC403C VIDEO OUT
Q15 2SC403C VIDEO OUT
TP-1
TP-2
TP-3
TP-4
TP-5
TP-6
TP-7
CLIP LEVEL
VIDEO LEVEL
WHITE CLIP
SYNC MIX
Q44 2SC1364 Q45 2SC1364 LIGHT LEVEL SWITCHER
Q16 2SC403C ASC OUT
Q17 2SC403C DETECTOR
Q18 2SC403C BLKG OUT
Q19 2SA678
Q20 2SC403C Q21 2SC403C BLKG FORMER
Q22 2SA678 V. BLKG AMP
Q23 2SA678 V. SYNC AMP
Q24 2SC403C Q25 2SC403C SYNC PULSE MIXER
Q26 2SA678 SYNC OUT
Q27 2SA678 SYNC OUT
DARK
ASC LEVEL
VIDEO OUT
SYNC CLIP
F4 0.316A (H board)
Q28 2SA678 H. SYNC AMP
Q29 2SC1364 BUFFER
Q30 2SA678 Q31 2SC1364 Q32 2SC1364 H. OSC
Q33 2SC1364
Q34 2SC1364 H. DRIVE
Q35 2SC1124 H. OUT
H. CENT
H. FREQ.
PULSE WIDTH
H. WIDTH
L5 H.W.C
BEAM
Q36 2SC1124 Q37 2SC1124 H.V REG
Q38 2SC1124 Q39 2SC1124 H.V REG
G4
Q1 2SC1363 REG
Q2 2SC1363 Q3 2SC1363 REG
PL1 PILOT LAMP
+9V ADJ
Q4 2SC1363 V.FORMER
Q5 2SC1363 FOCUS
Q6 2SC1363 REG
Q1 2SD291 +9V REG
Q2 2SD291 FOCUS REG
FOCUS
SW2 SYNC SW
EXT
INT
Q40 2SA678 V. SYNC AMP
Q41 2SC1364 V. OSC
Q42 2SC1364 V. DRIVE
Q43 2SC1124 V. OUT
T2
V. FREQ
V. SIZE
V. LINE
V. CENT

The shaded components are critical to safety.
Replace only with same component as specified.

①



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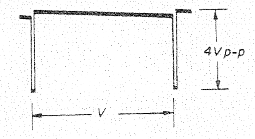

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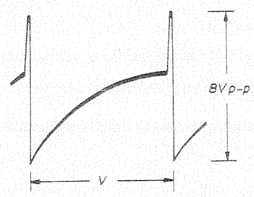

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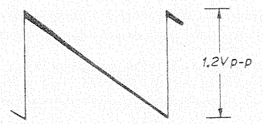

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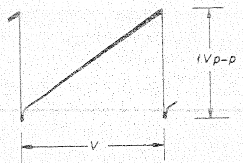

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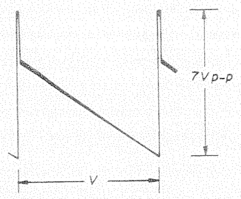

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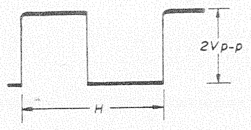

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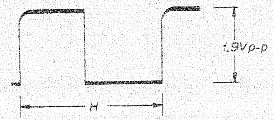

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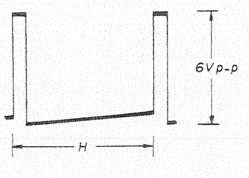

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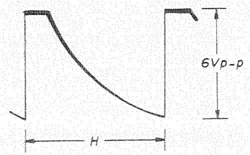

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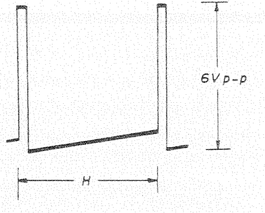

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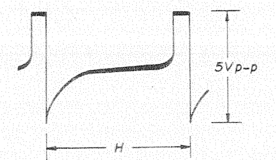

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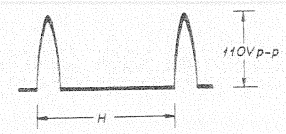

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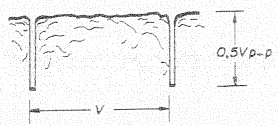

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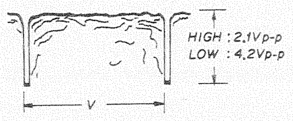
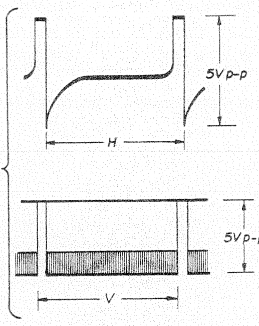
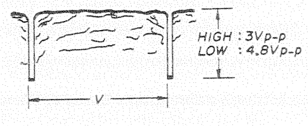

HIGH : 2.1Vp-p
LOW : 4.2Vp-p
V

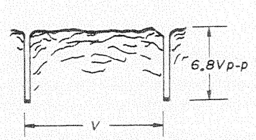
⑯


5Vp-p
H
5Vp-p
V

⑰


HIGH : 3Vp-p
LOW : 4.8Vp-p
V

⑱



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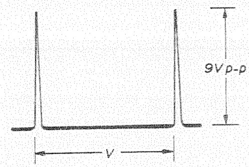

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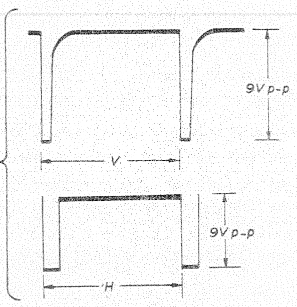
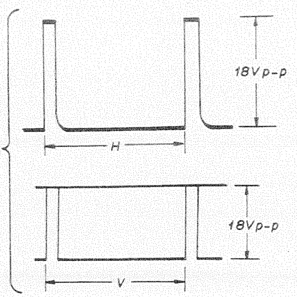
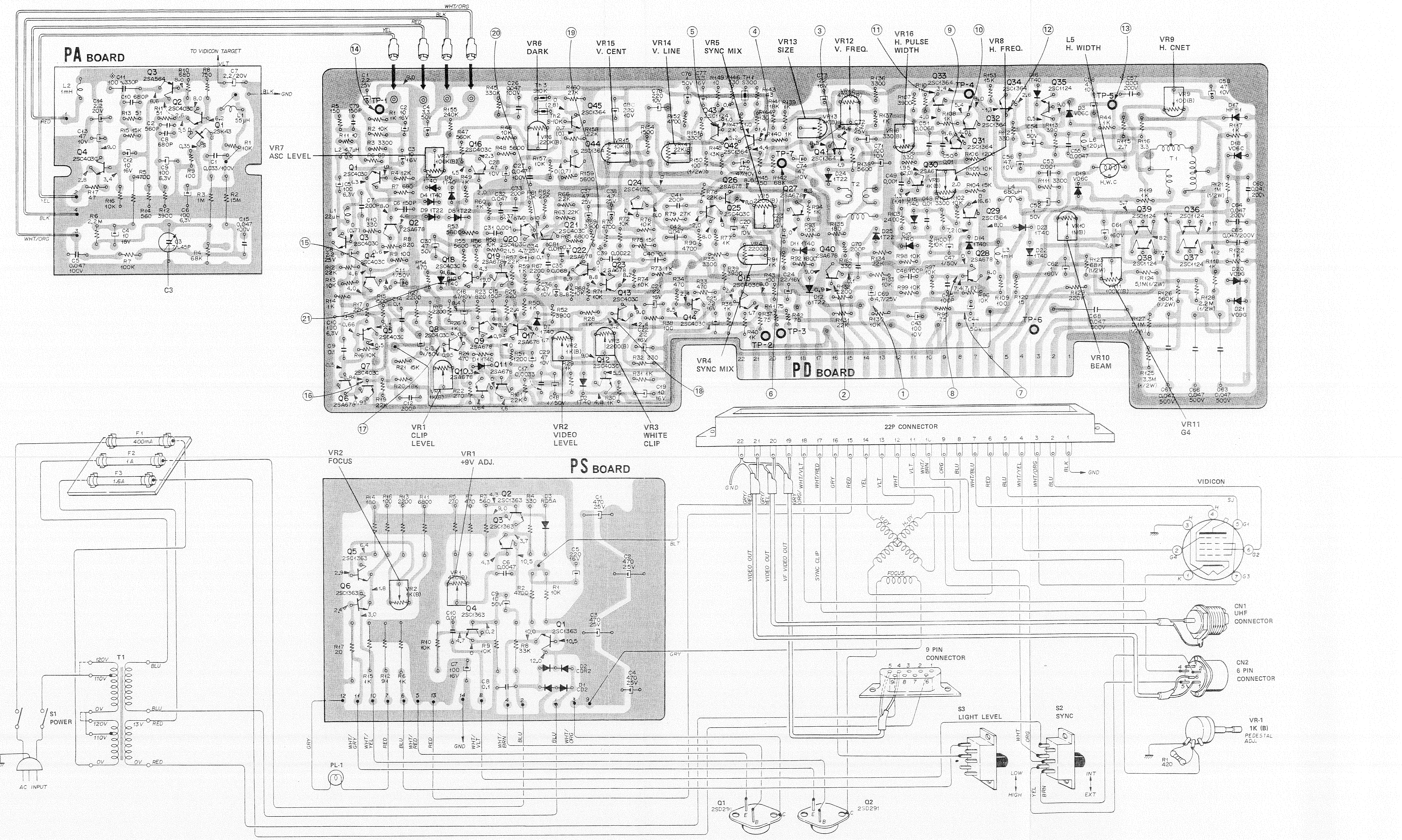

9Vp-p
V
9Vp-p
H

㉑


18Vp-p
H
18Vp-p
V

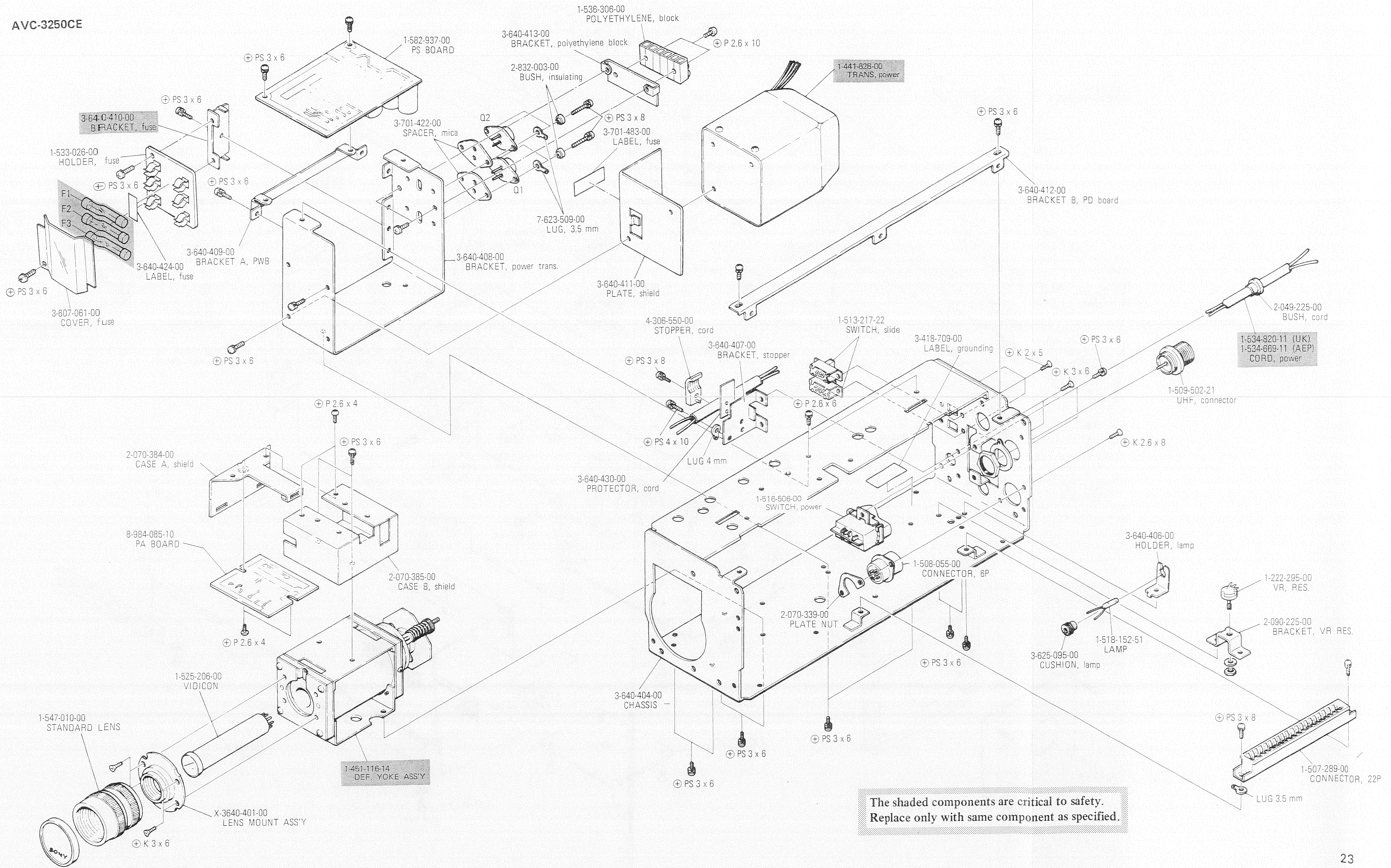
AVC-3250CE MOUNTING DIAGRAM


PA BOARD
TO VIDICON TARGET
PD BOARD
PS BOARD
VR7 ASC LEVEL
VR6 DARK
VR15 V. CENT
VR14 V. LINE
VR5 SYNC MIX
VR13 SIZE
VR12 V. FREQ.
VR16 H. PULSE WIDTH
VR8 H. FREQ.
L5 H. WIDTH
VR9 H. CNET
VR10 BEAM
VR11 G4
VR4 SYNC MIX
VR1 CLIP LEVEL
VR2 VIDEO LEVEL
VR3 WHITE CLIP
VR2 FOCUS
VR1 +9V ADJ.
22P CONNECTOR
VIDICON
CN1 UHF CONNECTOR
CN2 6 PIN CONNECTOR
9 PIN CONNECTOR
S3 LIGHT LEVEL
S2 SYNC
VR-1 1K (B) PEDESTAL ADJ.
S1 POWER
AC INPUT
T1
F1 400mA
F2 1A
F3 1.6A
PL-1
Q1 2SD291
Q2 2SD291
VIDEO OUT
VF VIDEO OUT
SYNC CLIP
FOCUS
H.W.C
TP-1
TP-2
TP-3
TP-4
TP-5
TP-6
TP-7
GND
WHT/ORG
BLK
RED
YEL
LOW
HIGH
INT
EXT

SECTION 7

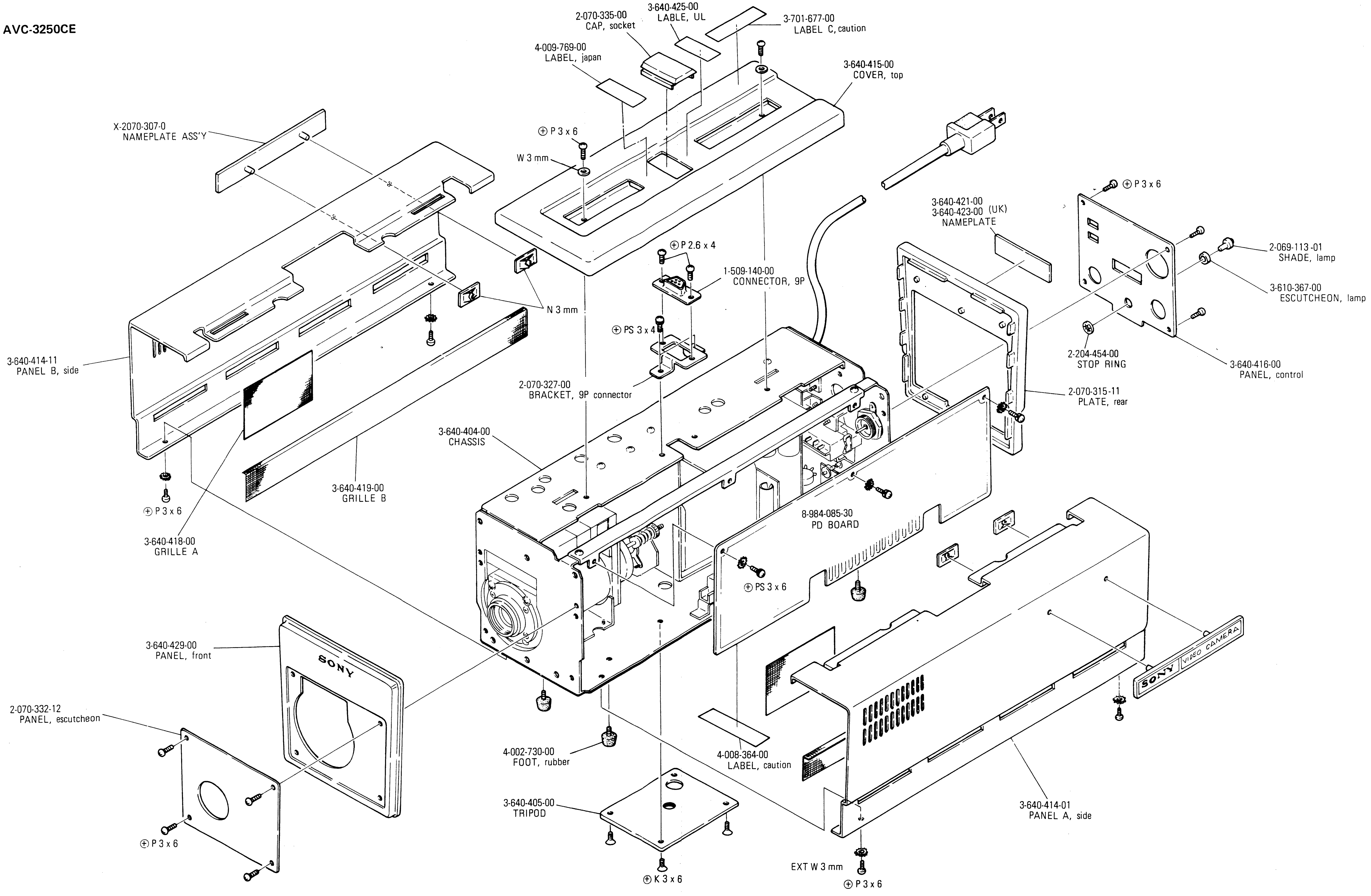
EXPLODED VIEW WITH PARTS NUMBER

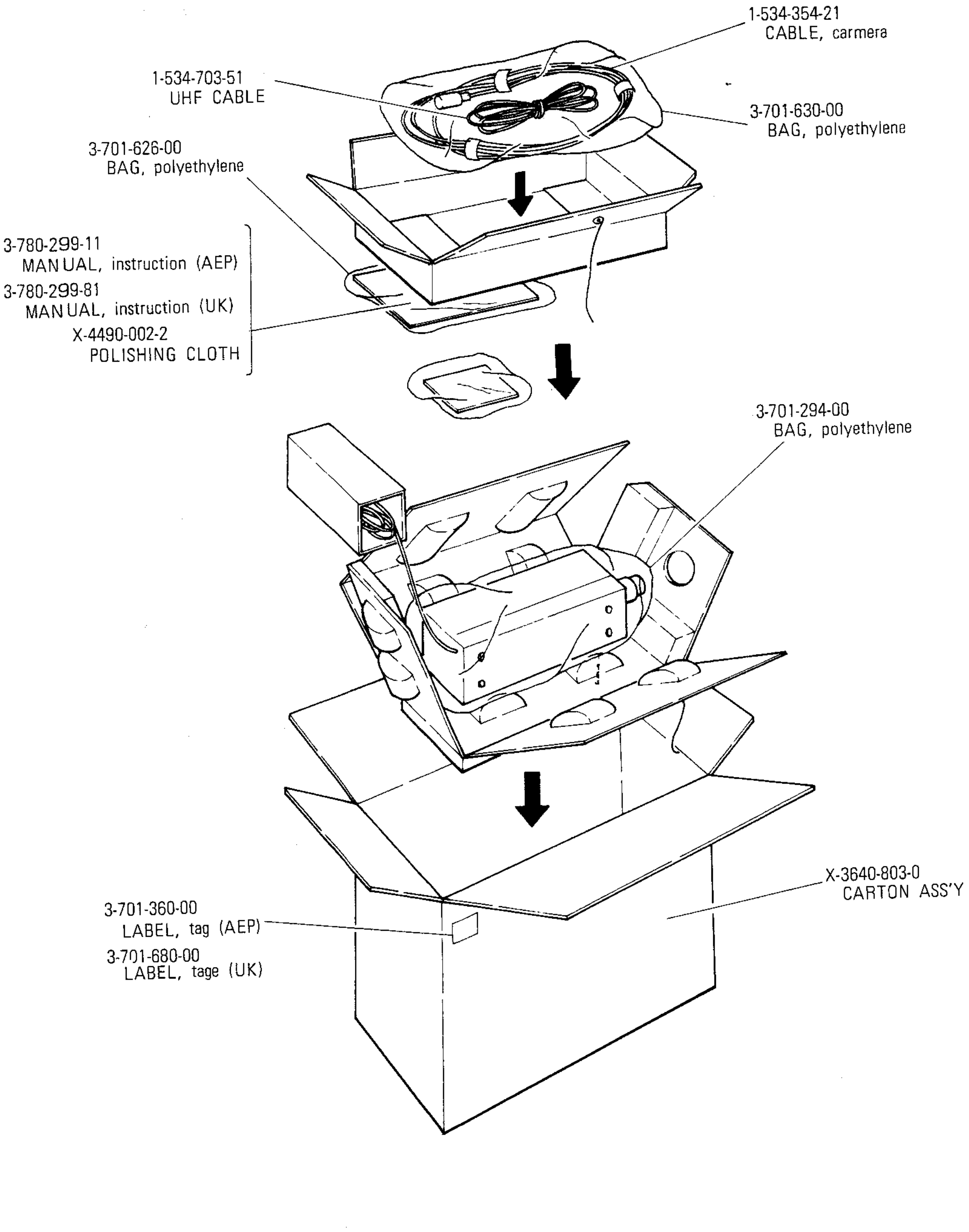
AVC-3250CE


1-536-306-00
POLYETHYLENE, block
3-640-413-00
BRACKET, polyethylene block
⊕ P 2.6 x 10
1-582-937-00
PS BOARD
⊕ PS 3 x 6
2-832-003-00
BUSH, insulating
1-441-828-00
TRANS, power
⊕ PS 3 x 6
3-640-410-00
BRACKET, fuse
3-701-422-00
SPACER, mica
Q2
⊕ PS 3 x 8
3-701-483-00
LABEL, fuse
⊕ PS 3 x 6
1-533-026-00
HOLDER, fuse
⊕ PS 3 x 6
⊕ PS 3 x 6
F1
F2
F3
Q1
7-623-509-00
LUG, 3.5 mm
3-640-412-00
BRACKET B, PD board
3-640-409-00
BRACKET A, PWB
3-640-424-00
LABEL, fuse
3-640-408-00
BRACKET, power trans.
⊕ PS 3 x 6
3-640-411-00
PLATE, shield
3-607-061-00
COVER, fuse
2-049-225-00
BUSH, cord
⊕ PS 3 x 6
4-306-550-00
STOPPER, cord
1-513-217-22
SWITCH, slide
3-418-709-00
LABEL, grounding
⊕ PS 3 x 6
3-640-407-00
BRACKET, stopper
⊕ K 2 x 5
1-534-820-11 (UK)
1-534-669-11 (AEP)
CORD, power
⊕ PS 3 x 8
⊕ K 3 x 6
1-509-502-21
UHF, connector
⊕ P 2.6 x 4
⊕ P 2.6 x 6
⊕ PS 4 x 10
⊕ PS 3 x 6
⊕ K 2.6 x 8
LUG 4 mm
2-070-384-00
CASE A, shield
3-640-430-00
PROTECTOR, cord
1-516-506-00
SWITCH, power
8-984-085-10
PA BOARD
3-640-406-00
HOLDER, lamp
1-508-055-00
CONNECTOR, 6P
2-070-385-00
CASE B, shield
1-222-295-00
VR, RES.
2-070-339-00
PLATE NUT
2-090-225-00
BRACKET, VR RES.
⊕ P 2.6 x 4
1-518-152-51
LAMP
⊕ PS 3 x 6
3-625-095-00
CUSHION, lamp
1-525-206-00
VIDICON
3-640-404-00
CHASSIS
1-547-010-00
STANDARD LENS
⊕ PS 3 x 8
⊕ PS 3 x 6
⊕ PS 3 x 6
1-451-116-14
DEF. YOKE ASS'Y
1-507-289-00
CONNECTOR, 22P
⊕ PS 3 x 6
LUG 3.5 mm
X-3640-401-00
LENS MOUNT ASS'Y
⊕ K 3 x 6
SONY

The shaded components are critical to safety.
Replace only with same component as specified.

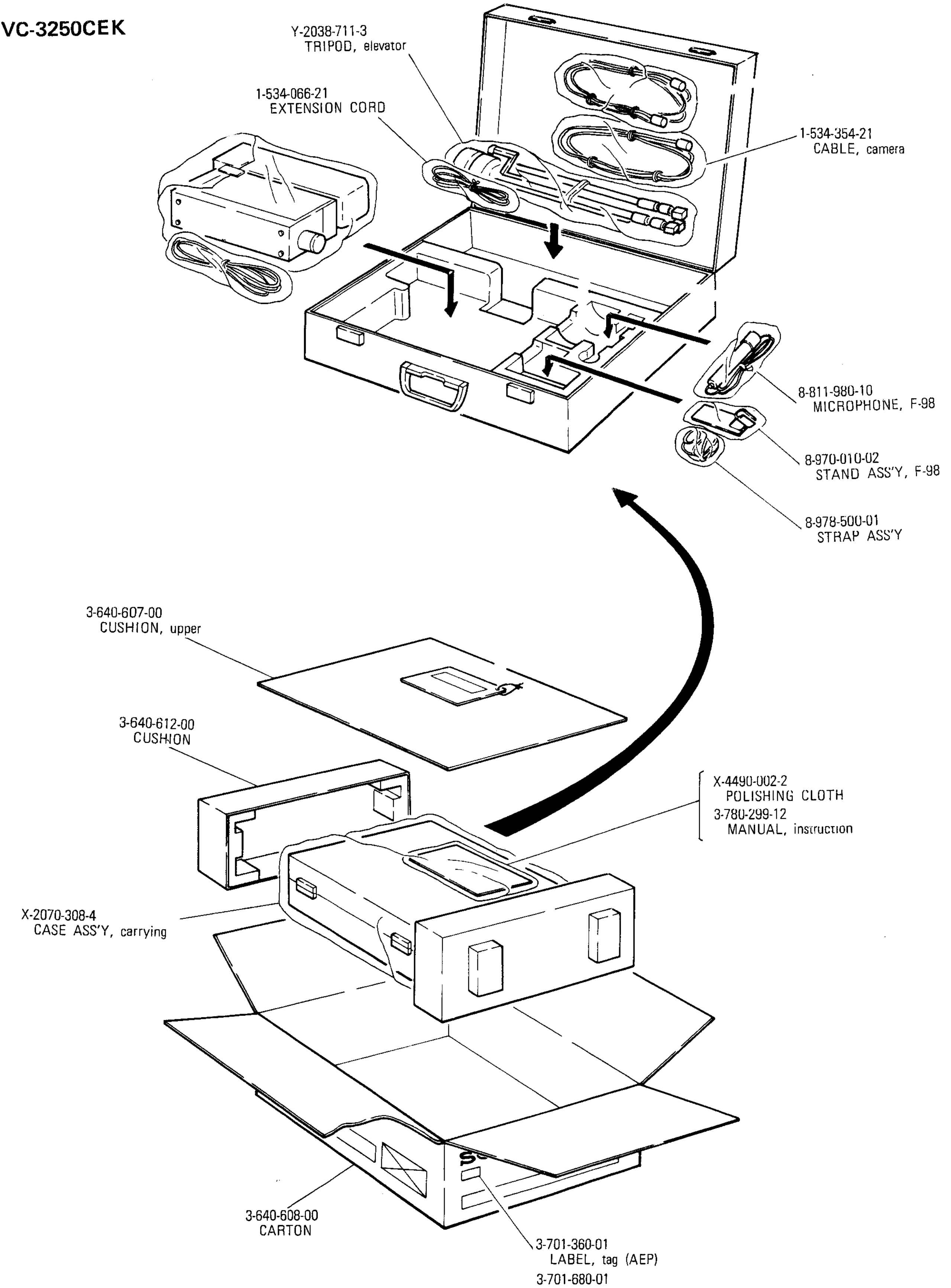
AVC-3250CE


2-070-335-00
CAP, socket
3-640-425-00
LABLE, UL
3-701-677-00
LABEL C, caution
4-009-769-00
LABEL, japan
3-640-415-00
COVER, top
X-2070-307-0
NAMEPLATE ASS'Y
⊕ P 3 x 6
W 3 mm
⊕ P 3 x 6
3-640-421-00
3-640-423-00 (UK)
NAMEPLATE
2-069-113-01
SHADE, lamp
⊕ P 2.6 x 4
1-509-140-00
CONNECTOR, 9P
3-610-367-00
ESCUTCHEON, lamp
N 3 mm
⊕ PS 3 x 4
3-640-414-11
PANEL B, side
2-204-454-00
STOP RING
3-640-416-00
PANEL, control
2-070-327-00
BRACKET, 9P connector
2-070-315-11
PLATE, rear
3-640-404-00
CHASSIS
3-640-419-00
GRILLE B
⊕ P 3 x 6
8-984-085-30
PD BOARD
3-640-418-00
GRILLE A
⊕ PS 3 x 6
3-640-429-00
PANEL, front
SONY
SONY VIDEO CAMERA
2-070-332-12
PANEL, escutcheon
4-002-730-00
FOOT, rubber
4-008-364-00
LABEL, caution
3-640-405-00
TRIPOD
3-640-414-01
PANEL A, side
⊕ P 3 x 6
EXT W 3 mm
⊕ K 3 x 6
⊕ P 3 x 6


1-534-354-21
CABLE, carmera
1-534-703-51
UHF CABLE
3-701-630-00
BAG, polyethylene
3-701-626-00
BAG, polyethylene
3-780-299-11
MANUAL, instruction (AEP)
3-780-299-81
MANUAL, instruction (UK)
X-4490-002-2
POLISHING CLOTH
3-701-294-00
BAG, polyethylene
X-3640-803-0
CARTON ASS'Y
3-701-360-00
LABEL, tag (AEP)
3-701-680-00
LABEL, tage (UK)

AVC-3250CE

AVC-3250CEK


Y-2038-711-3
TRIPOD, elevator
1-534-066-21
EXTENSION CORD
1-534-354-21
CABLE, camera
8-811-980-10
MICROPHONE, F-98
8-970-010-02
STAND ASS'Y, F-98
8-978-500-01
STRAP ASS'Y
3-640-607-00
CUSHION, upper
3-640-612-00
CUSHION
X-4490-002-2
POLISHING CLOTH
3-780-299-12
MANUAL, instruction
X-2070-308-4
CASE ASS'Y, carrying
3-640-608-00
CARTON
3-701-360-01
LABEL, tag (AEP)
3-701-680-01
LABEL, tag (UK)

SECTION 8

ELECTRICAL PARTS LIST

PA BOARD

Ref. No.	Part No.	Description		
	8-984-085-10	PA MTD Board		

Capacitors

Ref. No.	Part No.	Description		
C8,10	1-102-116-11	Ceramic	680 pF	50V
C1	1-105-719-12	Mylar	0.033 μF	100V
C5,15	1-105-721-12	Mylar	0.047 μF	100V
C4,12	1-121-651-11	Elect	10 μF	16V
C13	1-121-352-11	Elect	47 μF	10V
C6,9	1-121-413-11	Elect	100 μF	6.3V
C7,14	1-131-196-11	Tantal	2.2 μF	20V
C2	1-102-115-11	Ceramic	560 pF	50V
C11	1-107-085-11	Mica	100 pF	50V
C11	1-107-091-11	Mica	180 pF	50V
C11	1-107-095-11	Mica	270 pF	50V
C11	1-107-097-11	Mica	330 pF	50V
C3	1-141-074-11	Trimmer	7~45 pF	

Inductors

Ref. No.	Part No.	Description	
L2	1-407-195-21	Inductor	1 mH
L1	1-407-787-11	Inductor	55 μH

Resistors

Carbon resistors in ohm, ±5%, 1/4W are omitted.

PS BOARD

Ref. No.	Part No.	Description		
	8-984-085-20	PS MTD Board		

Capacitors

Ref. No.	Part No.	Description		
C6	1-105-669-12	Mylar	0.0047 μF	50V
C10	1-105-673-12	Mylar	0.01 μF	50V
C8	1-105-685-12	Mylar	0.1 μF	50V
C9	1-121-738-11	Elect	10 μF	50V
C7	1-121-415-11	Elect	100 μF	16V
C5	1-121-421-11	Elect	220 μF	16V
C1~4	1-121-733-11	Elect	470 μF	25V

Resistors

Carbon resistors in ohm, ±5%, 1/4W are omitted

Ref. No.	Part No.	Description	
R17	1-213-167-11	Metal	20 1/2W
VR-1	1-222-804-11	VR RES 1K-B	
VR-2	1-222-805-11	VR RES 470-B	

PD BOARD

Ref. No.	Part No.	Description		
	8-984-085-30	PD MTD Board		

Capacitors

Ref. No.	Part No.	Description		
*39,C31, 49,53	1-105-661-12	Mylar	0.001 μF	50V
*39,C17	1-105-667-12	Mylar	0.0033 μF	50V
C55	1-105-669-12	Mylar	0.0047 μF	50V
C48,50, 81	1-105-673-12	Mylar	0.01 μF	50V
C32,42	1-105-681-12	Mylar	0.047 μF	50V
C9,14, 40	1-105-685-12	Mylar	0.1 μF	50V
C64,65	1-105-761-12	Mylar	0.047 μF	200V
C26,27	1-105-721-12	Mylar	0.047 μF	100V
C45,46	1-107-085-11	Mica	100 pF	50V
C6,15, 79	1-107-089-11	Mica	150 pF	50V
C7,12,33 41,70	1-107-092-11	Mica	200 pF	50V
C63, 66~68	1-113-122-11	Paper	0.047 μF	500V
C61,62	1-121-189-11	Elect	1 μF	160V
C11,13,18 44,47,52 54,76	1-121-391-11	Elect	1 μF	50V
C4	1-121-393-11	Elect	3.3 μF	50V
C34,37, 38,69	1-121-395-11	Elect	4.7 μF	25V
C2,3,19	1-121-651-11	Elect	10 μF	16V
C16,20,23 74,75,28, 29,36,56, 58,59	1-121-352-11	Elect	47 μF	10V
C30	1-121-411-11	Elect	47 μF	50V
C5,10	1-121-413-11	Elect	100 μF	6.3V
C43,71	1-107-414-11	Elect	100 μF	10V
C78,80	1-121-420-11	Elect	220 μF	10V
C1,8,12	1-131-205-11	Tantal	2.2 μF	25V
C77	1-131-197-11	Tantal	3.3 μF	16V
C25,73, 21,22,24	1-131-201-11	Tantal	22 μF	16V
*C39	1-131-665-12	Mylar	0.0022 μF	50V
*C51	1-131-670-12	Mylar	0.0056 μF	50V
*C51	1-131-671-12	Mylar	0.0068 μF	50V
C51	1-105-672-12	Mylar	0.0082 μF	50V
*C57	1-105-741-12	Mylar	0.001 μF	200V
C57	1-106-743-12	Mylar	0.0015 μF	200V
C57	1-105-745-12	Mylar	0.0022 μF	200V

Inductors

Ref. No.	Part No.	Description	
L1	1-407-161-11	Inductor	22 µH
L6	1-407-170-11	Inductor	120 µH
L2	1-407-186-11	Inductor	4.7 µH
L4	1-407-193-11	Inductor	680 µH
L3	1-407-195-11	Inductor	1 µH
L5	1-407-352-11	Coil, H size	

Resistors

Carbon resistors in ohm, ±5%, 1/4W are omitted.

Ref. No.	Part No.	Description	
R123	1-202-617-11	COMPO 68 k	1/2W
R126	1-202-639-11	COMPO 560 k	1/2W
R121	1-202-645-11	COMPO 1M	
R128	1-202-653-11	COMPO 2.2M	
R125	1-202-657-11	COMPO 3.3M	
R124, 127	1-202-662-11	COMPO 5.1M	1/2W
VR9	1-224-247-11	VR RES 100-B	
VR12	1-221-978-11	VR RES 4.7K-B	
VR14	1-221-979-11	VR RES 22K-B	
VR16	1-221-986-11	VR RES 330-B	
VR3,4,5	1-121-997-11	VR RES 2.2K-B	
VR15	1-222-701-11	VR RES 10K-B	
VR1,2,8 13	1-222-804-11	VR RES 1K-B	
VR7,11	1-222-845-11	VR RES 100K-B	
VR10	1-222-846-11	VR RES 1M-B	
VR6	1-222-894-11	VR RES 220K-B	

Transformers

Ref. No.	Part No.	Description
T1	1-439-151-11	FBT
T2	1-435-008-21	VBT

Thermistors

Ref. No.	Part No.	Description
TH1	1-800-196-11	S-300
TH2,3	1-800-202-11	S-10K

Others

Ref. No.	Part No.	Description
	1-506-108-11	SV Terminal

Fuse (on H board)

Ref. No.	Part No.	Description
F4	1-532-235-11	0.316A

CHASSIS

Capacitor

Ref. No.	Part No.	Description		
C1	1-113-122-11	Paper	0.047 µF	500V

Resistors

Carbon resistors in ohm, ±5%, 1/4 are omitted.

Ref. No.	Part No.	Description	
VR1	1-222-295-11	VR RES	1K-ohm-B

Transformer

Ref. No.	Part No.	Description
T1	1-441-828-23	Power

Others

Ref. No.	Part No.	Description	
CN4	1-507-289-11	Connector,	22 P
CN2	1-508-055-11	Connector	6 P
CN3	1-509-140-12	Connector	9 P
CN1	1-509-502-21	Connector,	UHF
S2,3	1-513-217-22	Switch, slide	
S1	1-516-506-11	Switch, power	
PL1	1-518-152-51	LAMP	
	1-525-206-00	VIDICON	
	1-451-116-14	DEF. YOKE ASY	
	1-534-820-11	Cord, power	
	1-536-047-11	Terminal	
F1	1-532-066-11	0.4A	
F2	1-532-078-11	1A	
F3	1-532-259-11	1.6A	
F4	1-532-235-11	0.316A	

1-536-306-11, Poly Block
1-533-026-31, Holder, Fuse

The shaded components are critical to safety.
Replace only with same component as specified.